



WARZYN

PROJECT
7005100

148050 40

VOLUME IV OF IV

REMEDIAL INVESTIGATION
NORTH BRONSON INDUSTRIAL AREA
BRONSON, MICHIGAN

JULY 1993

PREPARED FOR:
MICHIGAN DEPARTMENT OF NATURAL RESOURCES
LANSING, MICHIGAN

...

PREPARED BY:
WARZYN INC.
NOVI, MICHIGAN

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EXAMPLES OF
BACKGROUND CALCULATIONS

Appendix J-1
Summary of Computer Generated
Mean, Standard Deviation, Coefficient of Variation and Background Values
for Metals and Cyanide
Surface Soil
North Bronson Industrial Area
Bronson, Michigan

ANALYTE	Units	SS1-0.5	SS2-0.5	SS13-0.5	SS14-0.5	SS15-0.5	SS16-0.5	AVERAGE	STD(3)	Coefficient of Variation	Background(4)
Aluminum	mg/kg	6970.00	6480.00	6850.00	8530.00	5800.00	5360.00	6665.00	1103.72	0.17	9976.15
Antimony	mg/kg	2.05 *	2.05 *	2.05 *	2.00 *	6.60	1.55 *	2.72	1.91	0.70	6.60
Arsenic	mg/kg	2.70	4.80	6.70	3.50	5.30	3.10	4.35	1.53	0.35	8.93
Barium	mg/kg	43.60	34.10	57.60	55.10	72.60	62.90	54.32	13.73	0.25	95.51
Beryllium	mg/kg	0.12 *	0.26	0.25	0.40	0.24	0.11 *	0.23	0.11	0.46	0.55
Cadmium	mg/kg	0.34 *	0.79	0.34 *	0.34 *	0.60 *	0.32 *	0.45	0.20	0.43	0.79
Calcium	mg/kg	1060.00	1540.00	1210.00	1310.00	7070.00	21800.00	5665.00	8238.29	1.45	30379.86
Chromium	mg/kg	9.30	13.50	12.20	20.10	9.20	9.40	12.28	4.23	0.34	24.96
Cobalt	mg/kg	2.30	3.20	4.10	5.70	5.20	4.70	4.20	1.27	0.30	8.02
Copper	mg/kg	28.60	30.60	4.50 ***	0.22 ***	18.60	5.30 ***	25.93	6.43	0.25	45.22
Iron	mg/kg	7460.00	15800.00	11500.00	15600.00	10200.00	10300.00	11810.00	3291.66	0.28	21684.97
Lead	mg/kg	10.80	25.60	9.70	7.00	32.80	22.50	18.07	10.38	0.57	49.21
Magnesium	mg/kg	1070.00	907.00	1250.00	1870.00	2370.00	2170.00	1606.17	612.23	0.38	3442.85
Manganese	mg/kg	139.00	194.00	592.00	550.00	613.00	362.00	406.33	208.00	0.51	1032.33
Mercury	mg/kg	0.03 *	0.03 *	0.03 *	0.03 *	0.05 *	0.14	0.05	0.04	0.88	0.14
Nickel	mg/kg	7.50	8.00	8.10	9.60	9.90	6.60	8.28	1.26	0.15	12.06
Potassium	mg/kg	268.00	285.00	368.00	413.00	445.00	798.00	429.50	193.42	0.45	1009.75
Selenium	mg/kg	0.23 *	0.23 *	0.23 *	0.23 *	0.45 *	0.48 *	0.31	0.12	0.39	ND
Silver	mg/kg	0.34 *	0.35 *	0.34 *	0.34 *	0.55 *	0.55 *	0.41	0.11	0.26	ND
Sodium	mg/kg	21.75 *	47.80	21.80 *	21.70 *	47.70 *	36.80 *	33.26	13.02	0.39	47.80
Thallium	mg/kg	0.12 *	0.12 *	0.12 *	0.11 *	0.11 *	0.12 *	0.12	0.00	0.04	ND
Vanadium	mg/kg	15.00	22.70	22.60	32.00	16.90	14.90	20.68	6.57	0.32	40.40
Zinc	mg/kg	30.40	50.50	36.50	34.40	60.40	55.70	44.65	12.48	0.28	82.09
Cyanide	mg/kg	0.16 *	0.17 *	0.19	0.09 *	2.75 *	2.80 *	1.03	1.35	1.31	0.19

SGW/llv/MWK/JFK
[Bronson/J-1A]

Notes:

- 1) The maximum concentration between a sample and a duplicate is used in calculations.
- 2) Data from two rounds is averaged and the average is used in calculations.
- 3) Standard deviation is calculated based on MDNR's Waste Management Division Clean-up Verification Guidance Document, November, 1991.
- 4) Background values are equal to the mean value plus 3 standard deviations but, when there is only one detection of a metal, that concentration is used as the background concentration.
- 5) * = Values were outliers and omitted from background calculations, so the coefficient of variation was closer to 0.50.

Appendix J-1
Summary of Computer Generated
Mean, Standard Deviation, Coefficient of Variation and Background Values
for Metals and Cyanide
Subsurface Soil
North Bronson Industrial Area
Bronson, Michigan

ANALYTE	Units	SS1-3.5	SS2-3.5	SS13-3.5	SS14-3.5	SS15-3.5	SS16-3.5	MW1S-5.0	MW11S-5.0	AVERAGE	STD(3)	Coefficient of Variation	Background(4) Value
Aluminum	mg/kg	6140.00	7140.00	9950.00	9620.00	5750.00	6500.00	1510.00	1600.00	6026.25	3158.96	0.52	15503.13
Antimony	mg/kg	1.95 *	2.00 *	2.05 *	2.10	3.20	1.60 *	2.70 *	2.35 *	2.24	0.50	0.22	3.20
Arsenic	mg/kg	3.30	12.60	6.60	5.20	4.70	5.30	3.00	5.80	5.81	2.99	0.52	14.80
Barium	mg/kg	18.60	49.50	43.10	35.30	36.70	37.90	4.70 **	8.30	32.77	14.34	0.44	75.80
Beryllium	mg/kg	0.46	0.43	0.61	0.55	0.21	0.12 ***	0.20	0.13 ***	0.41	0.17	0.42	0.92
Cadmium	mg/kg	0.33 *	0.33 *	0.34 *	0.35	0.28	0.50 *	0.40	0.60 *	0.39	0.11	0.27	0.71
Calcium	mg/kg	663.00	1040.00	6940.00	1290.00	53400.00	30100.00	49200.00	67400.00	26254.13	27407.21	1.04	108475.76
Chromium	mg/kg	14.20	13.10	12.70	14.70	9.10	10.30	3.60	9.70	10.93	3.62	0.33	21.79
Cobalt	mg/kg	3.80	10.10 **	5.10	4.30	4.40	4.90	1.20 *	1.15	3.55	1.68	0.47	8.58
Copper	mg/kg	20.90	16.60	14.90	22.20	12.50	11.90	9.00	12.30	15.04	4.60	0.31	28.85
Iron	mg/kg	16800.00	17000.00	15400.00	17900.00	9440.00	11700.00	4710.00	4620.00	12196.25	5455.72	0.45	28563.40
Lead	mg/kg	5.40	9.80	7.60	6.80	16.70 **	7.70	2.70	3.90	6.27	2.44	0.39	13.58
Magnesium	mg/kg	1270.00	2320.00	3260.00	1990.00	3180.00	8970.00	7400.00	12400.00	5098.75	4012.45	0.79	17136.10
Manganese	mg/kg	199.00	1310.00 **	558.00	307.00	245.00	295.00	134.00	145.00	269.00	144.17	0.54	701.52
Mercury	mg/kg	0.03	0.03	0.03 *	0.03	0.05	0.05	0.05 *	0.06 *	0.04	0.01	0.31	0.08
Nickel	mg/kg	6.20	21.20	15.20	15.90	7.80	11.10	4.50	11.50	11.68	5.58	0.48	28.41
Potassium	mg/kg	368.00	448.00	585.00	671.00	390.00	952.00	244.00	258.00	489.50	237.91	0.49	1203.24
Selenium	mg/kg	0.22	0.22 *	0.23 *	0.24	0.45 *	0.46 *	0.20 *	0.31 *	0.29	0.11	0.37	ND
Silver	mg/kg	0.33 *	0.33 *	0.34 *	0.35	0.50 *	0.55 *	0.90 *	0.19 *	0.44	0.22	0.50	ND
Sodium	mg/kg	21.15 *	21.30 *	21.75 *	22.50	46.30 *	49.20 *	71.50	52.40	38.26	19.24	0.50	95.97
Thallium	mg/kg	0.11 *	0.11 *	0.12 *	0.12	0.11 *	0.12 *	0.30 *	0.12 *	0.14	0.07	0.47	ND
Vanadium	mg/kg	25.20	18.80	23.20	25.30	15.60	16.10	5.00	6.00	16.90	7.98	0.47	40.83
Zinc	mg/kg	18.90	37.40	40.50	44.90	31.50	32.00	17.30	18.60	30.14	10.74	0.36	62.36
Cyanide	mg/kg	0.12 *	0.14 *	0.09 *	0.09	2.75 *	2.90 *	0.50 *	0.60 *	0.90	1.21	1.34	ND

Notes:

- * = non-detect represented by one-half the sample quantitation limit.
- ** = sample result determined to be an outlier.
- *** = non-detect represented by one-half the sample quantitation limit determination to be an outlier.

Appendix J-1
Summary of Computer Generated
Mean, Standard Deviation, Coefficient of Variation and Background Values
for Metals, Cyanide and Indicators
Groundwater
North Bronson Industrial Area
Bronson, Michigan

ANALYTE	Units	MW01S-01	MW01S-02	Max(1)	MW01S-02	Ave(2)	MW01S-01	MW11S-02	Ave	MW14S-01	MW14S-02	Ave	MW23-01	MW29-01	AVERAGE	STD(3)	Coefficient of Variation	Background(4)
Arsenic	ug/L						8.2		8.2						8.2	0.00	0.00	8.20
Barium	ug/L	66.7	31	66.7	30.4	48.55	99.5	102	100.75		5.6	5.6 *	22.4	67.6	59.825	33	0.55	158.77
Calcium	ug/L	84400	89500	89500	93300	91400	95500	94200	94850	52900	54700	53800	67600	91200	79770	18,137	0.23	134182.14
Chromium	ug/L									13.4					13.4	0.00	0.00	13.40
Copper	ug/L													14.7	14.7	0.00	0.00	14.70
Lead	ug/L													3.3	3.3	0.00	0.00	3.30
Magnesium	ug/L	13100	13700	13700	14100	13900	22000	19300	20650	9760	10100	9930	14000	19800	15656	4,492	0.29	29133.12
Manganese	ug/L	3.2		3.2		3.2	912	111	511.5				24.2	88.7	156.9	239	1.52	874.45
Mercury	ug/L		0.59	0.59		0.59									0.59	0.00	0.00	0.59
Potassium	ug/L						8670	8850	8780					8260	8510	353.55	0.04	9570.68
Sodium	ug/L		15700	15700	16100	15900		46700	46700				5290 *	31,500	31367	15400	0.49	77567.97
Alkalinity	mg/L	257	297	297	292	294.5	351	318	334.5	154	170	162	193	277	252.2	72.14	0.29	468.63
Chloride	mg/L	5.54	25.8	25.8	27.7	26.75	36.2	79.2	57.7				9.44 *	72.2	52.22	23.22	0.44	121.86
COD	mg/L		44	44	41.2	42.6	39	92	65.5	68	56	62	208 *	216 *	56.70	12.34	0.22	93.71
NO3+NO	mg/L	1.7	0.481	1.7	0.573	1.1365	0.1		0.1	2	1.01	1.505	6.32 *	2.13	1.22	0.85	0.70	3.77
Ammonia	mg/L	0.24		0.24	0.039	0.1395	0.2	0.095	0.1475					0.063	0.12	0.05	0.40	0.26
TKN	mg/L	1.69		1.69		1.69	0.26	0.477	0.3685		0.157	0.157			0.74	0.83	1.12	3.23
Sulfate	mg/L		6.8	6.8	6.8	6.8	14	19	16.5	8.6	13	10.8	19	43 *	13.28	5.51	0.42	29.82
TOC	mg/L		15.6	15.6	6.4	11	14	18	16	38	10.3	24.15	9.8	5.2	13.23	7.21	0.55	34.87

Notes:

- 1) The maximum concentration between a sample and a duplicate is used in calculations.
- 2) Data from two rounds is averaged and the average is used in calculations.
- 3) Standard deviation is calculated based on MDNR's Waste Management Division Clean-up Verification Guidance Document, November, 1991.
- 4) Background values are equal to the mean value plus 3 standard deviations but, when there is only one detection of a metal, that concentration is used as the background concentration.
- 5) * = Values were outliers and omitted from background calculations, so the coefficient of variation was closer to 0.50.

SGW/jlv/MWK/JFK
[Bronson\J-1]
Revised :6/26/92

J2

MERA OPERATIONAL MEMORANDUM #8
REVISION 1 (MARCH 16, 1992)

MICHIGAN DEPARTMENT OF NATURAL RESOURCES

INTEROFFICE COMMUNICATION

March 16, 1992

TO: Environmental Response Division Staff

FROM: Alan J. Howard, Chief, Environmental Response Division

SUBJECT: MERA Operational Memorandum #8, Revision 1 -- Type B Criteria Rules 299.5709, 299.5711(2), 299.5711(5) and 299.5713

The attached table lists Type B cleanup criteria which have been developed according to the algorithms set forth in the specific rules identified below. This table replaces the previously issued list of Type B criteria dated June 22, 1990 and the partially completed list accompanying Operational Memorandum #8 dated January 8, 1992. The criteria were developed using currently available toxicological and other data and are subject to change as new data become available. A list of Type B criteria reflecting the most recent data will be available to staff on the Local Area Network (LAN). When the list is available on the LAN, staff will be informed and advised how to access it. This memo will be updated periodically (approximately every six months) to provide a list which can easily be distributed to interested parties outside the Department. Criteria on these lists should be considered draft; final cleanup criteria will be confirmed by Environmental Response Division (ERD) toxicologists and approved as part of a site-specific remedial action plan. This table addresses only those rules which include a specific algorithm or regulatory standard. Staff are reminded that Type B remedial action plans must address all elements required by the rules, including those for which specific criteria are not shown here. Additional guidance for applying the criteria for each rule follows.

Note that in cases where Type B criteria are less than Type A criteria (either method detection limits or background), Type A criteria become the cleanup goal. Type B criteria are not applicable in these cases.

Rule 299.5709 -- Groundwater in aquifers

Subrules (2)(a) and (b) of this rule specify the criteria for carcinogens and noncarcinogens, respectively. The values in the first column of the table were developed using the algorithms in Rules 299.5723 (for carcinogens) and 299.5725 (for noncarcinogens). The values in the second column of the table were established, where sufficient data are available, to protect against adverse aesthetic impacts of hazardous substances on groundwater.

The most restrictive of the values in the first two columns of the table is the cleanup criteria required to satisfy Rule 299.5709. Note that this rule requires that aquifer cleanup criteria take into account adverse aesthetic impacts resulting from one or a combination of hazardous substances. If adverse aesthetic impacts remain when health based criteria have been achieved, further remedial measures may be required. Consult your Supervisor if you encounter such a case.

Rule 299.5711 -- Soil

The table presents values for the subrules that are most often expected to be the controlling factor in determining soil cleanup criteria. However, a Type B remedial action plan must include rationale that supports the conclusions drawn from the assessment of pertinent pathways (i.e., some discussion of each pertinent pathway must be included which assesses whether more restrictive criteria are required; See R 299.5711(1)(a-e) and Rule Interpretation Memo #5 dated March 8, 1991).

Note that the rules allow for a value higher than twenty times the groundwater cleanup criteria to be established as the soil cleanup criteria protective of groundwater through the use of a leachate test or other method which better represents in situ conditions. The "20X" values in the table are provided for convenience and are not mandatory if leachate tests or other methods support the use of a higher value. For certain materials, namely PCBs, carcinogenic PNAs, 4,4'-methylene-bis-2-chloro-aniline (MBOCA), which strongly adsorb to soil and are known not to leach at significant concentrations, the direct contact value is accepted as the soil cleanup criteria without site-specific leachate tests or other evaluations to determine mobility. Consult an ERD toxicologist if you have questions about whether other substances may be handled in this manner.

Rule 299.5713 -- Impacts of groundwater contaminants on surface water

The third column in the table lists values based on calculations done by Surface Water Quality Division (SWQD) in accordance with Rule 323.1057 of the Water Resources Commission Act (1929 PA 245, as amended). For use in ERD programs, the Rule 57 values have been identified as the groundwater surface water interface (GSI) values. The GSI values are presented on this list in two significant figures as they were provided by the SWQD. The GSI values are the criteria used to judge compliance with Rule 299.5713. GSI values are developed for surface water which is not used as a drinking water source and also for surface water which serves as a source of drinking water. GSI values presented in the list are for surface waters not protected as a drinking water source. If the surface water at a site serves as a drinking water source, contact an ERD toxicologist to obtain the correct GSI value. In cases where data are inadequate to calculate a GSI value, the party proposing the remedial action may generate the minimum data necessary to propose a value for Department review and approval.

Rule 299.5713 requires that the GSI value not be exceeded at a point where groundwater naturally discharges to surface water. Demonstration of compliance with this rule may be made by monitoring at the groundwater-surface water interface, or by predictive modeling. It is not necessary that the GSI value be achieved throughout the aquifer; however, a remedial action plan which proposes to meet the GSI value throughout the aquifer in lieu of monitoring at the interface or modeling will be acceptable. Note that the sixth column on the table will show 20 times the GSI values. This value is shown for ease of reference in cases where soil is to be remediated to that level as a source control measure. Rule 299.5711 does not require that soil meet the "20 times GSI values", as long as the GSI value is not exceeded at the groundwater-surface water interface.

Acceptable Method Detection Limits

The table includes the acceptable method detection limit for each hazardous substance, where one has been determined. These acceptable method detection limits are taken from Operational Memorandum #6, dated October 1, 1991 and are provided to allow for convenient comparison between Type B criteria and potential Type A criteria. Consult Operational Memorandum #6 for a full description of the use of acceptable method detection limits and proper methods for analysis.

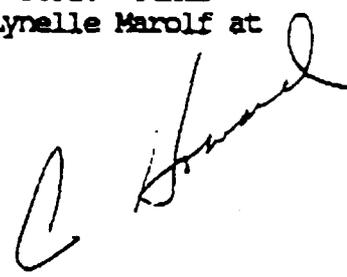
Keep in mind that use of particular methods and detection limits listed in Operational Memorandum #6 are not mandatory. Other methods or detection limits may be approved as part of a site-specific remedial action plan.

These acceptable method detection limits are applicable to environmental investigations and monitoring performed pursuant to Act 307 response activities. These detection limits may not be applicable to environmental monitoring activities performed pursuant to other environmental statutes. Facilities subject to regulation under other environmental statutes should consult with the appropriate DNR Division for further information regarding appropriate analytical detection limits.

This memo is intended to provide guidance to Division staff to foster consistent application of the Michigan Environmental Response Act (1982 PA 307, as amended) and the Administrative Rules promulgated thereunder. This document is not intended to convey any rights to any parties nor create any duties or responsibilities under law. This document and matters addressed herein are subject to revision.

Questions about values in the attached table should be directed to one of the ERD toxicologists: Chris Flaga, telephone 517-373-0160; Felix Adatsi, telephone 517-335-3078; or Jeff Crum, telephone 517-335-3092. Other questions about this memorandum should be directed to Lynelle Marolf at 517-373-9893.

Attachment
rev. 1

A handwritten signature in black ink, appearing to be 'C. Flaga', is written over the bottom right portion of the page.

ADDENDUM TO 3/20/92 TYPE B CRITERIA LIST

The following lists represent those chemicals that have been added or whose criteria have changed since operational memorandum #8 was released.

CHEMICALS ADDED

2-Butoxyethanol
Camphene
2,4-Dichlorophenol
Isopropyl alcohol
2-Methoxyethanol
3-Methylphenol
2-Pentene
Sulfate
2,2,4-Trimethyl-2-pentene

CHEMICALS WHOSE CRITERIA HAVE CHANGED

Benzo(a)anthracene
Benzo(a)pyrene
Benzo(b)fluoranthene
Benzo(k)fluoranthene
Chloride
Chrysene
Dibenzo(a,h)anthracene
Indeno(1,2,3-cd)pyrene

CHEMICALS WHOSE PRESENTATION HAS CHANGED

Lead (transferred from noncarcinogen list to carcinogen list)
Polychlorinated biphenyls (individual Aroclors now presented)

ACT 307 TYPE B CLEANUP CRITERIA AND ACCEPTABLE METHOD DETECTION LIMITS FOR GROUNDWATER AND SOIL

Type B criteria were calculated using currently available toxicological data and the algorithms set forth in the Act 307 Rules. These criteria may change as new toxicity data become available. They are not necessarily final cleanup standards. Please read the attached introduction for details. All values are expressed in units of parts per billion (ppb); ug/l in water and ug/kg in soil. Scientific notation is represented by E+ or E- a value, for example, 2 X 10⁶ is reported as 2E+6.

Chemical	Groundwater (ug/l)		Groundwater/ Surface Water Interface (GSI)	Acceptable Method Detection Limit in Water(B)	Soil (ug/kg)			Acceptable Method Detection Limit in Soil(C)
	Health-Based Drinking Water Value {R 709(2)(a)(b)}	Aesthetic Drinking Water Value {R 709(2)(c)(d)}	GSI Value(A) {R 713}		20X Drinking Water Value {R 711(2)}	Direct Contact Value {R 711(5)}	20X GSI Value	
CARCINOGENS								
1,1,1,2-Tetrachloroethane	1	10	NA(M)	1	20	NA(M)	10,000	10
1,1,2,2-Tetrachloroethane	0.2	10	32	1	4	640	2,000	10
1,1,2-Trichloroethane	0.6	10	65	1	12	1,300	7,000	10
1,2,3,7,8-Pentachlorodibenzofuran	4E-6	10	3E-7 (K)	ND	8E-5	6E-6	0.2	ND
1,2-Dichloroethane	0.4	10	560	1	8	11,000	4,000	10
1,2-Dichloropropane	0.5	10	64	1	10	1,300	6,000	10
1,3-Dichloropropene	0.2	10	NA(M)	1	4	NA(M)	2,000	10
1,4-Dichlorobenzene	1	10	15	5	20	300	20,000	330
1,4-Dioxane	3	10	2,300	1	60	46,000	40,000	5
2,3,4,7,8-Pentachlorodibenzofuran	4E-7	10	3E-8 (K)	ND	8E-6	6E-7	0.02	ND
2,3,7,8-Heptachlorodibenzo-p-dioxin	2E-5	10	1E-6 (K)	ND	0.0004	2E-5	0.9	ND
2,3,7,8-Heptachlorodibenzofuran	2E-5	10	1E-6 (K)	ND	0.0004	2E-5	0.9	ND
2,3,7,8-Hexachlorodibenzo-p-dioxin	2E-6	10	1E-7 (K)	ND	4E-5	2E-6	0.09	ND
2,3,7,8-Hexachlorodibenzofuran	2E-6	10	1E-7 (K)	ND	4E-5	2E-6	0.09	ND
2,3,7,8-Pentachlorodibenzodioxin	4E-7	10	3E-8 (K)	ND	8E-6	6E-7	0.02	ND
2,3,7,8-Tetrachlorodibenzo-p-dioxin	2E-7	10	1.4E-8	ND	4E-6	2.8E-7	0.009	ND
2,3,7,8-Tetrachlorodibenzofuran	2E-6	10	1E-7 (L)	ND	4E-5	2E-6	0.09	ND
2,4,6-Trichlorophenol	3	10	1.5	5	60	30	1E+5	330

ACT 307 TYPE B CLEANUP CRITERIA AND ACCEPTABLE METHOD DETECTION LIMITS FOR GROUNDWATER AND SOIL

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Chemical	Groundwater (ug/l)		Groundwater/ Surface Water Interface [GSI]	Acceptable Method Detection Limit in Water(B)	Soil (ug/kg)			Acceptable Method Detection Limit in Soil(C)
	Health-Based Drinking Water Value	Aesthetic Drinking Water Value	GSI Value(A)		20X Drinking Water Value	Direct Contact Value	20X GSI Value	
	[R 709(2)(a)(b)]	[R 709(2)(c)(d)]	[R 713]		[R 711(2)]	[R 711(5)]		
CARCINOGENS								
2,4-Dinitrotoluene	0.05	10	NA(M)	5	1	NA(M)	2,000	330
3,3'-Dichlorobenzidine	0.08	10	0.063	20	1.6	1.3	3,000	2000
4,4'-Methylene-bis-2-chloroaniline	0.04	10	NA(M)	ND	--(M)	NA(M)	1,000	ND
Acrylamide	0.008	10	9.1	ND	0.16	180	300	ND
Acrylonitrile	0.06	10	2.2	1	1.2	44	700	10
Alachlor	0.4	10	NA(M)	ND	8	NA(M)	20,000	ND
Aldrin	0.002	10	NA(M)	0.01	0.04	NA(M)	80	1.7
alpha-hexachlorocyclohexane	0.006	10	NA(M)	0.01	0.12	NA(M)	200	1.7
Aniline	6	10	4	20	120	80	70,000	1,700
Arsenic	0.02	10	100	1	0.4 (D)	3,600 (D)	600(D)	100
Atrazine	0.2	10	NA(M)	ND	4	NA(M)	6,000	ND
Azobenzene	0.3	10	NA(M)	ND	6	NA(M)	10,000	ND
Benzene	1	10	60	1	20	1,200	10,000	10
Benzidine	0.0002	10	0.04	50	0.004	0.8	6	5,000
Benzo(a)anthracene	0.006	10	NA(M)	5	--(M)	NA(M)	200	330
Benzo(a)pyrene	0.006	10	NA(M)	5	--(M)	NA(M)	200	330
Benzo(b)fluoranthene	0.006	10	NA(M)	5	--(M)	NA(M)	200	330
Benzo(k)fluoranthene	0.006	10	NA(M)	5	--(M)	NA(M)	200	330
Benzyl Chloride	0.2	10	NA(M)	ND	4	NA(M)	2,000	ND

ACT 307 TYPE B CLEANUP CRITERIA AND ACCEPTABLE METHOD DETECTION LIMITS FOR GROUNDWATER AND SOIL

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Chemical	Groundwater (ug/l)		Groundwater/ Surface Water Interface (GSI)	Acceptable Method Detection Limit in Water(B)	Soil (ug/kg)		Acceptable Method Detection Limit in Soil(C)	
	Health-Based Drinking Water Value	Aesthetic Drinking Water Value	GSI Value(A)		20X Drinking Water Value	20X GSI Value	Direct Contact Value	
	{R 709(2)(a)(b)}	{R 709(2)(c)(d)}	{R 713}		{R 711(2)}		{R 711(5)}	
CARCINOGENS								
beta-hexachlorocyclohexane	0.02	10	NA(N)	0.01	0.4	NA(N)	700	1.7
bis(2-Chloroethyl)ether	0.03	10	4.2	5	0.6	84	400	330
bis(2-Ethylhexyl)phthalate	2	10	NA(N)	5	40	NA(N)	90,000	330
Bromodichloromethane	0.3	10	24	1	6	480	3,000	10
Bromoform	4	10	65	1	80	1,300	50,000	10
Carbon tetrachloride	0.3	10	21	1	6	420	3,000	10
Chlordane	0.03	10	5.3E-4	0.01	0.6	0.011	1,000	1.7
Chloroethane	9	10	NA(N)	1	180	NA(N)	1E+5	10
Chloroform	6	10	43	1	120	860	60,000	10
Chloromethane	3	10	NA(N)	1	60	NA(N)	30,000	10
Chrysene	0.006	10	NA(N)	5	--(N)	NA(N)	200	330
DDD	0.1	10	NA(N)	0.01	2	NA(N)	5,000	3.3
DDE	0.1	10	NA(N)	0.01	2	NA(N)	4,000	3.3
DDT	0.1	10	2.3E-4	0.01	2	0.0046	4,000	3.3
Dibenzo(a,h)anthracene	0.006	10	NA(N)	5	--(N)	NA(N)	200	330
Dibromochloromethane	0.4	10	29	1	8	580	5,000	10
Dichlorovos	0.1	10	NA(N)	ND	2	NA(N)	4,000	ND
Dieldrin	0.002	10	3.2E-5	0.01	0.04	0.0064	80	3.3
Epichlorohydrin	4	10	NA(N)	ND	80	NA(N)	40,000	ND

ACT 307 TYPE B CLEANUP CRITERIA AND ACCEPTABLE METHOD DETECTION LIMITS FOR GROUNDWATER AND SOIL

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Chemical	Groundwater (ug/l)		Groundwater/ Surface Water Interface (GSI)		Soil (ug/kg)		Acceptable Method Detection Limit in Soil(C)	
	Health-Based Drinking Water Value [R 709(2)(a)(b)]	Aesthetic Drinking Water Value [R 709(2)(c)(d)]	GSI Value(A) [R 713]	Acceptable Method Detection Limit in Water(B)	20X Drinking Water Value [R 711(2)]	20X GSI Value		Direct Contact Value [R 711(S)]
CARCINOGENS								
Ethylene dibromide	0.0004	ID	1.1 MA(M)	1 ND	0.000	22 MA(M)	5 10,000	10 ND
Gentian violet	0.3	ID	0.0016	0.01	6	0.032	300	1.7
Heptachlor	0.006	ID	MA(M)	0.01	0.16	MA(M)	100	1.7
Heptachlor epoxide	0.004	ID	0.0018	0.01(J)	0.08	0.036	800	50(J)
Hexachlorobenzene (C-66)	0.02	ID	MA(M)	0.01(J)	0.4	MA(M)	5,000	50(J)
Hexachlorobutadiene (C-46)	0.4	ID	MA(M)	ND	0.00012	MA(M)	0.2	ND
Hexachlorodibenzo-p-dioxin, mixture	6E-6	ID	MA(M)	0.01(J)	40	260	30,000	50(J)
Hexachloroethane	2	ID	13	5	--(M)	MA(M)	200	330
Hexachloropyrene	0.006	ID	MA(M)	5	160	17,000	90,000	330
Indeno(1,2,3-cd)pyrene	0	ID	860	5	--	160 (D)	--(I)	1000
Isophorone	(1)	ID	8 (E)	3	--	1.9	1,000	1.7
Lead(G)	0.03	ID	0.097	0.01	0.6	1.200	50,000	10
Lindane	5	ID	59	5	100	MA(M)	50	330
Methylene chloride	0.005	ID	MA(M)	5	0.1	MA(M)	3E+5	ND
n-Nitroso-di-n-Propylamine	7	ID	MA(M)	5	140	0.0082	9	ND
N-Nitrosodiphenylamine	0.0002	ID	1E-5 (K)	ND	0.004	0.0002	9	ND
Octachlorodibenzo-p-dioxin	0.0002	ID	1E-5 (K)	ND	0.004	0.0002	10,000	1,700
Octachlorodibenzofurans	0.3	ID	23 (F)	20	6	460	100	ND
Pentachlorophenol	0.004	ID	MA(M)	ND	0.08	MA(M)		
Polybrominated biphenyls								

ACT 307 TYPE B CLEANUP CRITERIA AND ACCEPTABLE METHOD DETECTION LIMITS FOR GROUNDWATER AND SOIL

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Chemical	Groundwater (ug/l)		Groundwater/ Surface Water Interface (GSI)	Acceptable Method Detection Limit in Water (B)	Soil (ug/kg)			Acceptable Method Detection Limit in Soil (C)
	Health-Based Drinking Water Value [R 709(2)(a)(b)]	Aesthetic Drinking Water Value [R 709(2)(c)(d)]	GSI Value(A) [R 713]		20X Drinking Water Value [R 711(2)]	20X GSI Value	Direct Contact Value [R 711(5)]	
CARCINOGENS								
Polychlorinated biphenyls (Aroclor 1016)	0.02	ID	2E-5	0.1	--(M)	0.0004	1,000	33
Polychlorinated biphenyls (Aroclor 1221)	0.02	ID	2E-5	0.1	--(M)	0.0004	1,000	33
Polychlorinated biphenyls (Aroclor 1232)	0.02	ID	2E-5	0.1	--(M)	0.0004	1,000	33
Polychlorinated biphenyls (Aroclor 1242)	0.02	ID	2E-5	0.1	--(M)	0.0004	1,000	33
Polychlorinated biphenyls (Aroclor 1248)	0.02	ID	2E-5	0.1	--(M)	0.0004	1,000	33
Polychlorinated biphenyls (Aroclor 1254)	0.02	ID	2E-5	0.1	--(M)	0.0004	1,000	33
Polychlorinated biphenyls (Aroclor 1260)	0.02	ID	2E-5	0.1	--(M)	0.0004	1,000	33
Styrene	1	ID	19	1	20	380	10,000	10
Tetrachloroethylene	0.7	ID	16	1	14	320	8,000	10
Toxaphene	0.03	ID	NA(M)	0.1	0.6	NA(M)	400	170
Trichloroethylene	3	ID	94	1	60	1,900	40,000	10
tris(2,3-Dibromopropyl)phosphate	0.02	ID	NA(M)	ND	0.4	NA(M)	700	ND
Vinyl chloride	0.02	ID	3.1	1	0.4	62	200	10

- (A) Groundwater surface water interface (GSI) values are based on Rule 57 of Act 245. Surface Water Quality Division presents Rule 57 values in two significant figures as shown on this list. The GSI values are presented only to establish groundwater criteria which are protective of surface water. Type B surface water established for surface water remediation must be developed separately.
- (B) Acceptable method detection limits for groundwater samples.
- (C) Acceptable method detection limits for soil samples.
- (D) Use local background if higher than criteria and representative of background as defined in Rule 701.
- (E) GSI value is hardness dependent. Value generated assuming hardness of 178 mg/l CaCO₃. If site-specific hardness is expected to be significantly different, please contact an ERD toxicologist.
- (F) GSI value is pH dependent. Value for pentachlorophenol was generated assuming a pH of > 8.1. If site-specific pH < 8.1, please contact an ERD toxicologist.
- (G) Lead classified as probable human carcinogen but cannot be assessed quantitatively in the same manner typical of most carcinogens. Contact a toxicologist for details.
- (H) Professional judgment used to determine that 50 ppb of aluminum in drinking water is protective of human health.
- (I) Under review.
- (J) Different method detection limit acceptable with appropriate analytical method. Please refer to Operational Memorandum #6 (dated 10/1/91) for details.
- (K) GSI values for 307 Program developed using Toxicity Equivalency Factors. Rule 57 values not available under Act 245.
- (L) GSI value for 307 Program developed using Toxicity Equivalency Factors (TEFs). Act 245 Rule 57 value is different because TEFs not used.
- (M) Chemical not expected to leach through soil...soil direct contact criterion assumed to be protective of groundwater.
- (N) Chemical has either not been evaluated or an inadequate data base precludes the development of a GSI value. MDNR should be contacted to determine whether a chemical is being evaluated or has been evaluated since this list was prepared. If no value exists, the responsible party (RP) may develop a proposed GSI value for MDNR review and approval. Guidance can be obtained from MDNR. If a GSI value cannot be developed from data in the scientific literature, the RP can either perform a Type A cleanup or generate the minimum toxicity data required to develop the GSI value.

ID - Insufficient data

ND - Not determined

NA - Not available

MDNR - Michigan Department of Natural Resources

ACT 307 TYPE B CLEANUP CRITERIA AND ACCEPTABLE METHOD DETECTION LIMITS FOR GROUNDWATER AND SOIL

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Chemical	Groundwater (ug/l)		Groundwater/ Surface Water Interface (GSI)	Acceptable Method Detection Limit in Water(B)	Soil (ug/kg)			Acceptable Method Detection Limit in Soil(C)
	Health-Based Drinking Water Value	Aesthetic Drinking Water Value	GSI Value(A)		20X Drinking Water Value	20X GSI Value	Direct Contact Value	
	{R 709(2)(a)(b)}	{R 709(2)(c)(d)}	{R 713}		{R 711(2)}	{R 711(2)}	{R 711(5)}	
NONCARCINOGENS								
1,1,1-Trichloroethane	200	ID	120	1	4,000	2,400	2E+6	10
1,1,2-Trichloro-1,2,2-trifluoroethane	2E+5	ID	NA(N)	ND	4E+6	NA(N)	2E+9	ND
1,1-Dichloroethane	700	ID	NA(N)	1	14,000	NA(N)	8E+6	10
1,1-Dichloroethylene	7	ID	67	1	140	1,300	80,000	10
1,2,3-Trichloropropane	40	ID	NA(N)	ND	800	NA(N)	5E+5	ND
1,2,4,5-Tetrachlorobenzene	2	ID	0.4	ND	40	8	80,000	ND
1,2,4-Trichlorobenzene	9	ID	22	5	180	440	1E+5	330
1,2-Dichlorobenzene	600	ID	7	5	12,000	140	7E+6	330
1,3-Dichlorobenzene	600	ID	180	5	12,000	3,600	7E+6	330
1-Ethyl-2-methylbenzene	10	ID	NA(N)	ND	ID	NA(N)	ID	ND
2(2,4,5-Trichlorophenoxy)propionic acid	50	ID	21	ND	1,000	420	2E+6	ND
2,2,4-Trimethyl-2-pentene	10	ID	NA(N)	ND	ID	NA(N)	ID	ND
2,4,5-Trichlorophenol	700	ID	NA(N)	5	14,000	NA(N)	8E+6	330
2,4-Dichlorophenol	20	ID	34	5	400	680	8E+5	330
2,4-Dichlorophenoxyacetic acid	70	ID	47	ND	1,400	940	8E+5	ND
2,4-Dimethylphenol	400	ID	31	5	8,000	620	1E+7	330
2,6-Dimethylphenol	4	ID	NA(N)	ND	80	NA(N)	2E+5	ND
2-Butanone	400	ID	4,100	50	8,000	82,000	4E+6	100

ACT 307 TYPE B CLEANUP CRITERIA AND ACCEPTABLE METHOD DETECTION LIMITS FOR GROUNDWATER AND SOIL

Type B criteria were calculated using currently available toxicological data and the algorithms set forth in the Act 307 Rules. These criteria may change as new toxicity data become available. They are not necessarily final cleanup standards. Please read the attached introduction for details. All values are expressed in units of parts per billion (ppb); ug/l in water and ug/kg in soil. Scientific notation is represented by E+ or E- a value, for example, 2 X 10⁶ is reported as 2E+6.

Chemical	Groundwater (ug/l)		Groundwater/ Surface Water Interface (GSI)	Acceptable Method Detection Limit In Water(B)	Soil (ug/kg)			Acceptable Method Detection Limit In Soil(C)
	Health-Based Drinking Water Value [R 709(2)(a)(b)]	Aesthetic Drinking Water Value [R 709(2)(c)(d)]	GSI Value(A) [R 713]		20X Drinking Water Value [R 711(2)]	Direct Contact Value [R 711(5)]	20X GSI Value	
NONCARCINOGENS								
2-Butoxyethanol	10	10	NA(N)	ND	10	NA(N)	10	ND
2-Chloroethyl vinyl ether	10	10	NA(N)	ND	10	NA(N)	10	ND
2-Chlorophenol	40	10	9.8	5	800	200	1E+6	330
2-Hexanone	10	10	NA(N)	50	10	NA(N)	10	100
2-Methoxyethanol	30	10	NA(N)	ND	800	NA(N)	3E+5	ND
2-Methyl-4,6-dinitrophenol	3	10	0.59	20	60	12	1E+5	1,700
2-Methylnaphthalene	10	10	NA(N)	ND	200	NA(N)	4E+5	ND
2-Methylphenol	400	10	38	ND	8,000	700	1E+7	ND
2-Pentene	10	10	NA(N)	ND	10	NA(N)	10	ND
3,4-Dimethylphenol	10	10	NA(N)	ND	200	NA(N)	4E+5	ND
3-Methylphenol	400	10	NA(N)	ND	8,000	NA(N)	1E+7	ND
4-Methyl-2-pentanone	400	10	NA(N)	50	8,000	NA(N)	4E+6	200
4-Methylphenol	400	10	24	ND	8,000	400	1E+7	ND
Acenaphthene	400	10	NA(N)	5	8,000	NA(N)	2E+7	330
Acenaphthylene	10	10	NA(N)	5	10	NA(N)	10	330
Acetone	700	10	500	50	14,000	10,000	8E+6	100
Acetonitrile	40	10	NA(N)	1	800	NA(N)	5E+5	10
Acrylic acid	600	10	NA(N)	ND	12,000	NA(N)	6E+6	ND
Aluminum	10	50-200(N)	NA(N)	20	1,000(D)	NA(N)	10	500

ACT 307 TYPE B CLEANUP CRITERIA AND ACCEPTABLE METHOD DETECTION LIMITS FOR GROUNDWATER AND SOIL

Type B criteria were calculated using currently available toxicological data and the algorithms set forth in the Act 307 Rules. These criteria may change as new toxicity data become available. They are not necessarily final cleanup standards. Please read the attached introduction for details. All values are expressed in units of parts per billion (ppb); ug/l in water and ug/kg in soil. Scientific notation is represented by E+ or E- a value, for example, 2 X 10⁶ is reported as 2E+6.

Chemical	Groundwater (ug/l)		Groundwater/ Surface Water Interface (GSI)	Acceptable Method Detection Limit In Water (B)	Soil (ug/kg)		Acceptable Method Detection Limit In Soil (C)	
	Health-Based Drinking Water Value	Aesthetic Drinking Water Value	GSI Value (A)		20X Drinking Water Value	Direct Contact Value		
	[R 709(2)(a)(b)]	[R 709(2)(c)(d)]	[R 713]		[R 711(2)]	[R 711(5)]		
NONCARCINOGENS								
Anthracene	2,000	ID	NA(N)	5	40,000	NA(N)	8E+7	330
Antimony	3 (D)	ID	NA(N)	5	60(D)	NA(N)	1E+5	500
Barium	2,000(D)	ID	NA(N)	200	40,000(D)	NA(N)	9E+7	1000
Benzo(g,h,i)perylene	ID	ID	NA(N)	5	ID	NA(N)	ID	330
Benzoic acid	30,000	ID	NA(N)	ND	6E+5	NA(N)	1E+9	ND
Benzyl alcohol	10,000	ID	22	ND	2E+5	440	1E+8	ND
Boron	600(D)	ID	NA(N)	ND	12,000(D)	NA(N)	2E+7	ND
Bromobenzene	ID	ID	NA(N)	ND	ID	NA(N)	ID	ND
Bromomethane	10	ID	11	1	200	220	1E+5	10
Butyl benzyl phthalate	1,000	ID	NA(N)	5	20,000	NA(N)	5E+7	330
Cadmium	4 (D)	ID	0.6 (E)	0.2	80 (D)	12 (D)	1E+5	50
Camphene	ID	ID	NA(N)	ND	ID	NA(N)	ID	ND
Carbon disulfide	700	ID	NA(N)	50	14,000	NA(N)	8E+6	100
Chloride	ND	250,000	NA(N)	ND	5E+5	NA(N)	ID	ND
Chlorobenzene	100	ID	71	1	2,000	1,400	2E+6	10
Chromium (III)	7,000(D)	ID	77 (E)	50	1.4E+5 (D)	1500	3E+8	2,500
Chromium (VI)	100 (D)	ID	1.7	1	2,000 (D)	34 (D)	1E+6	200
cis-1,2-Dichloroethylene	70	ID	NA(N)	1	1,400	NA(N)	8E+5	10
Copper	1,000 (D)	ID	18 (E)	25	2E+4 (D)	360 (D)	1E+7	1,000

ACT 307 TYPE B CLEANUP CRITERIA AND ACCEPTABLE METHOD DETECTION LIMITS FOR GROUNDWATER AND SOIL

Type B criteria were calculated using currently available toxicological data and the algorithms set forth in the Act 307 Rules. These criteria may change as new toxicity data become available. They are not necessarily final cleanup standards. Please read the attached introduction for details. All values are expressed in units of parts per billion (ppb); ug/l in water and ug/kg in soil. Scientific notation is represented by E+ or E- a value, for example, 2 X 10⁶ is reported as 2E+6.

Chemical	Groundwater (ug/l)		Groundwater/ Surface Water Interface (GSI)	Acceptable Method Detection Limit in Water (B)	Soil (ug/kg)		Acceptable Method Detection Limit in Soil (C)	
	Health-Based Drinking Water Value [R 709(2)(a)(b)]	Aesthetic Drinking Water Value [R 709(2)(c)(d)]	GSI Value(A) [R 713]		20X Drinking Water Value [R 711(2)]	Direct Contact Value [R 711(5)]		
NONCARCINOGENS								
Cyanazine	7	10	NA(N)	ND	140	NA(N)	3E+5	ND
Cyanide (Free)	100	10	3.6	5	2,000	72	2E+6	100
Di-n-butyl phthalate	700	10	NA(N)	5	14,000	NA(N)	3E+7	330
Di-n-octyl phthalate	100	10	NA(N)	5	2,000	NA(N)	5E+6	330
Dibenzofuran	10	10	NA(N)	ND	10	NA(N)	10	ND
Dibromomethane	70	10	NA(N)	ND	1,400	NA(N)	8E+5	ND
Dichlorodifluoromethane	1,000	10	NA(N)	ND	20,000	NA(N)	2E+7	ND
Dicyclohexyl phthalate	10	10	NA(N)	ND	10	NA(N)	10	ND
Diethyl ether	1,000	10	NA(N)	ND	20,000	NA(N)	2E+7	ND
Diethyl phthalate	6,000	10	NA(N)	5	1.2E+5	NA(N)	2E+8	330
Dinoseb	7	10	0.5 (F)	ND	140	10	3E+5	ND
Endosulfan	0.4	10	NA(N)	0.01	8	NA(N)	10,000	3.3
Endrin	2	10	NA(N)	0.01	40	NA(N)	80,000	3.3
Ethyl acetate	6,000	10	NA(N)	ND	1.2E+5	NA(N)	7E+7	ND
Ethylbenzene	700	70	31	1	1,400	820	8E+6	10
Ethylene glycol	10,000	10	65,000	5000	2E+5	1.4E+6	5E+8	5000
Fluoranthene	300	10	NA(N)	5	6,000	NA(N)	1E+7	330
Fluorene	300	10	NA(N)	5	6,000	NA(N)	1E+7	330
Fluoride	2,000 (D)	2,000	1,900	ND	40,000 (D)	38,000 (D)	8E+7	ND

ACT 307 TYPE B CLEANUP CRITERIA AND ACCEPTABLE METHOD DETECTION LIMITS FOR GROUNDWATER AND SOIL

Type B criteria were calculated using currently available toxicological data and the algorithms set forth in the Act 307 Rules. These criteria may change as new toxicity data become available. They are not necessarily final cleanup standards. Please read the attached introduction for details. All values are expressed in units of parts per billion (ppb); ug/l in water and ug/kg in soil. Scientific notation is represented by E+ or E- a value, for example, 2×10^6 is reported as 2E+6.

Chemical	Groundwater (ug/l)		Groundwater/ Surface Water Interface (GSI)	Acceptable Method Detection Limit in Water (B)	Soil (ug/kg)		Acceptable Method Detection Limit in Soil (C)	
	Health-Based Drinking Water Value [R 709(2)(a)(b)]	Aesthetic Drinking Water Value [R 709(2)(c)(d)]	GSI Value(A) [R 713]		20X Drinking Water Value [R 711(2)]	Direct Contact Value [R 711(5)]		
NONCARCINOGENS								
Formaldehyde	1,000	ID	170	100	20,000	3,400	1E+7	500
Hexabromobenzene	10	ID	NA(N)	ND	200	NA(N)	5E+5	ND
Hexachlorocyclopentadiene (C-56)	50	ID	0.54	0.01(J)	1,000	11	2E+6	50(J)
Iron	ID	300 (D)	NA(N)	100	6,000(D)	NA(N)	ID	2000
Isobutyl alcohol	2,000	ID	NA(N)	ND	40,000	NA(N)	2E+7	ND
Isopropyl alcohol	400	ID	21000	ND	8,000	4.2E+5	5E+6	ND
Manganese	700	50 (D)	NA(N)	20	1,000(D)	NA(N)	3E+7	2000
Mercury (Inorganic)	2	ID	0.0013	0.2	40(D)	0.026	80,000	100
Methanol	4,000	ID	NA(N)	800	80,000	NA(N)	4E+7	800
Methoxychlor	40	ID	NA(N)	ND	800	NA(N)	1E+6	ND
Methyl-tert-butyl ether	500	ID	380	50	10,000	7,600	6E+6	100
N,N-Dimethylaniline	10	ID	NA(N)	ND	200	NA(N)	5E+5	ND
N-Hexane	400	ID	NA(N)	ND	8,000	NA(N)	5E+6	ND
Naphthalene	30	ID	29	5	600	580	1E+6	330
Nickel (Soluble salts)	100 (D)	ID	57 (E)	50	2,000(D)	1,100 (D)	4E+6	1000
Nitrate	10,000	ID	NA(N)	ND	2E+5	NA(N)	4E+8	ND
Nitrite	700	ID	NA(N)	ND	14,000	NA(N)	3E+7	ND
Nitrobenzene	4	ID	NA(N)	5	80	NA(N)	40,000	330
Pentachlorobenzene	6	ID	NA(N)	ND	120	NA(N)	2E+5	ND

ACT 307 TYPE B CLEANUP CRITERIA AND ACCEPTABLE METHOD DETECTION LIMITS FOR GROUNDWATER AND SOIL

Type B criteria were calculated using currently available toxicological data and the algorithms set forth in the Act 307 Rules. These criteria may change as new toxicity data become available. They are not necessarily final cleanup standards. Please read the attached introduction for details. All values are expressed in units of parts per billion (ppb); ug/l in water and ug/kg in soil. Scientific notation is represented by E+ or E- a value, for example, 2 X 10¹⁰ is reported as 2E+6.

Chemical	Groundwater (ug/l)		Groundwater/ Surface Water Interface (GSI)	Acceptable Method Detection Limit in Water(B)	Soil (ug/kg)			Acceptable Method Detection Limit in Soil(C)
	Health-Based Drinking Water Value [R 709(2)(a)(b)]	Aesthetic Drinking Water Value [R 709(2)(c)(d)]	GSI Value(A) [R 713]		20X Drinking Water Value [R 711(2)]	20X GSI Value	Direct Contact Value [R 711(5)]	
NONCARCINOGENS								
Phenanthrene	10	10	NA(N)	5	10	NA(N)	10	330
Phenol	4,000	10	1,100	5	80,000	22,000	5E+7	330
Propylene glycol	1E+5	10	1.9E+5	5000	2E+6	3.8E+6	2E+9	5000
Pyrene	200	10	NA(N)	5	4,000	NA(N)	6E+6	330
Pyridine	7	10	NA(N)	ND	140	NA(N)	80,000	ND
Selenium	40 (D)	10	20	5	800(D)	400 (B)	1E+6	500
Silver	40 (D)	100	0.1	0.5	800(D)	2 (D)	1E+6	500
Sodium	150,000	10	NA(N)	ND	3E+6(B)	NA(N)	1E+10	ND
Sulfate	10	250,000	NA(N)	ND	5E+6	NA(N)	10	ND
Tetrahydrofuran	200	10	3300	ND	4,000	66,000	3E+6	ND
Thallium	0.5(D)	10	NA(N)	2	10(D)	NA(N)	20,000	500
Toluene	1,000	800	110	1	16,000	2,200	2E+7	10
trans-1,2-Dichloroethylene	100	10	300	1	2,000	6,000	2E+6	10
Trichlorofluoromethane	2,000	10	NA(N)	ND	40,000	NA(N)	3E+7	ND
Xylenes	10,000	300	50	1	6,000	1,200	2E+8	30
Zinc	1,000 (D)	5,000	81 (E)	10	20,000(D)	1,800 (D)	5E+7	1000

- (A) Groundwater surface water interface (GSI) values are based on Rule 57 of Act 245. Surface Water Quality Division presents Rule 57 values in two significant figures as shown on this list. The GSI values are presented only to establish groundwater criteria which are protective of surface water. Type B surface water criteria established for surface water remediation must be developed separately.
- (B) Acceptable method detection limits for groundwater samples.
- (C) Acceptable method detection limits for soil samples.
- (D) Use local background if higher than criteria and representative of background as defined in Rule 7C1.
- (E) GSI value is hardness dependent. Value generated assuming hardness of 178 mg/l CaCO₃. If site-specific hardness is expected to be significantly different, please contact an ERD toxicologist.
- (F) GSI value is pH dependent. Value generated assuming a pH of 7.7. If site-specific pH is expected to be significantly different, please contact an ERD toxicologist.
- (G) Lead classified as probable human carcinogen but cannot be assessed quantitatively in the same manner typical of most carcinogens. Contact a toxicologist for details.
- (H) Professional judgment used to determine that 50 ppb of aluminum in drinking water is protective of human health.
- (I) Under review.
- (J) Different method detection limit acceptable with appropriate analytical method. Please refer to Operational Memorandum #6 (dated 10/1/91) for details.
- (K) GSI values for 307 Program developed using Toxicity Equivalency Factors. Rule 57 values not available under Act 245.
- (L) GSI value for 307 Program developed using Toxicity Equivalency Factors (TEFs). Act 245 Rule 57 value is different because TEFs not used.
- (M) Chemical not expected to leach through soil...soil direct contact criterion assumed to be protective of groundwater.
- (N) Chemical has either not been evaluated or an inadequate data base precludes the development of a GSI value. MDNR should be contacted to determine whether a chemical is being evaluated or has been evaluated since this list was prepared. If no value exists, the responsible party (RP) may develop a proposed GSI value for MDNR review and approval. Guidance can be obtained from MDNR. If a GSI value cannot be developed from data in the scientific literature, the RP can either perform a Type A cleanup or generate the minimum toxicity data required to develop the GSI value.

ID = Insufficient data

ND = Not determined

NA = Not available

MDNR = Michigan Department of Natural Resources

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**MDNR -
WASTE MANAGEMENT DIVISION -
CLEAN-UP
VERIFICATION GUIDANCE DOCUMENT
(NOVEMBER 1991)**

MDNR CLEANUP VERIFICATION GUIDANCE DOCUMENT

Part 2

- Act 64/RCRA Clean Closure
- Real Estate Transactions
- Non-Act 64/RCRA Facilities
- Clean Declaration

Introduction

This is a Waste Management Division (WMD) guidance on sampling protocol and necessary documentation for Act 64/RCRA Clean Closures. It provides the basis for establishing soil background, sampling grids, chemical constituent evaluation, analytical methods, statistical comparisons, excavation, disposal options and a certification checklist.

The term 'clean closure' means that the site has been restored to either Type A or Type B levels. Type A is as defined in Act 307, P.A. 1982, which references non-detect or background levels, or Type B as defined in Act 307, P.A. 1982, which references risk-based or background levels. Waste and/or soil removed should be classified as hazardous or nonhazardous to determine disposal options and handling requirements (i.e., solid waste under Act 641, P.A. 1978, as amended, or a hazardous waste under Act 64, P.A. 1979, as amended, and land ban restrictions under 40 CFR Part 268).

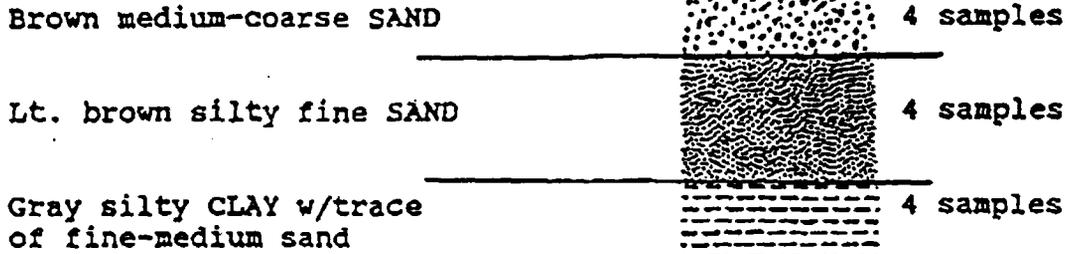
The following are recommended procedures for evaluating a proposed clean up and site restoration. These procedures are not "absolutes." Other approaches may be developed and submitted for approval. This system, if used, however, is acceptable.

A. ESTABLISHING SOIL BACKGROUND

1. Background should be established for site specific waste constituents, or specific chemicals used in various processes or facility operations. These should fall into three general categories: a) the EP TOXIC/TCLP METALS (arsenic, barium, cadmium, chromium, copper, lead, mercury, silver, selenium and zinc) using a total metals (dry-weight reported in mg/kg) test procedure for soil analysis, b) ORGANIC CONSTITUENTS, and c) other SITE SPECIFIC WASTE CONSTITUENTS (example Cyanide) as totals.

A minimum of four (4) samples must be used to establish "background" in soils. This will help to account for natural constituent occurrences and inherent variability within each distinctive soil horizon. Background samples must be collected in an "unimpacted" area. Based on waste type, contaminant mobility, operation practices and soil type (sand, silty sand, clay) an estimate of contamination depth should be made and background samples taken at comparable depths for the particular soil type. Multiple soil horizons should have "background" established separately (i.e., minimum of four (4) samples per each soil unit). For example:

ground surface



PRE AND/OR POST EXCAVATION SAMPLING GRID

1. A grid system should be established over the specified closure area. The closure area includes both sidewalls and base. Grid point representation should be proportioned to the size of the area for equal weighting. It is recommended that one of the following equations be used to determine grid intervals for stationing.

using: 1) $\frac{\sqrt{A/N}}{2} = GI$ or 2) $\frac{\sqrt{A/N}}{4} = GI$ or 3) $\frac{\sqrt{A/N}}{\sqrt{GL}} = GI$
 "small site" "medium site" "large site"

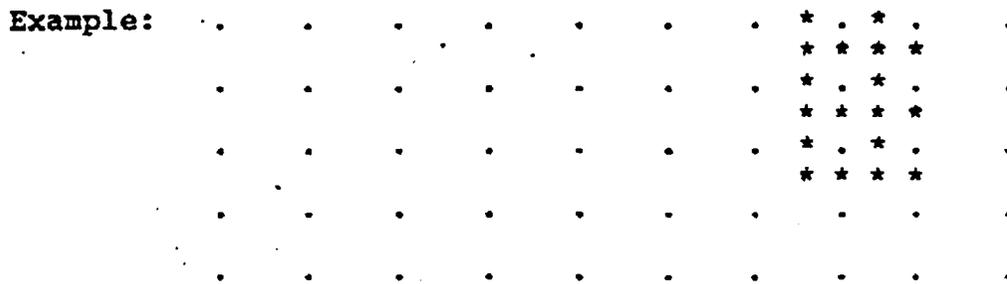
where: GL = length of area to be gridded
 A = area to be gridded (sq. ft.)
 GI = grid interval

It appears that there are logical size ranges of sites to which the three equations apply. For this guidance, the ranges are:
 a) small, 0 - 0.25 acre, b) medium, 0.25 - 3.0 acres, and
 c) large, 3.0 acres and greater.

To simplify this application a chart based on an average size range of sites (1 acre = 43,560 sq. ft.) has been developed.

<u>Site Acreage</u>	<u>Sq. Feet</u>	<u>Grid Interval</u>
0.001-0.25 (small)	43-10,890	5-30 ft. (minimum 9 sample stations)
0.25-3.00 (medium)	10,890- 130,680	15-60 ft.
3.0 and over (large)	130,680 +	30 ft.-plus

- After the grid interval is calculated, it is recommended that a scaled grid overlay be made to superimpose on a map of the excavated area (this area includes both sidewalls and base). Some specified point (usually the south west corner) should be designated as the 0,0 coordinate. The grid can then be adjusted to maximize sampling coverage. Some grid adjustment may be necessary for unusually shaped areas. Also, the excavation area can be subdivided with different grid intervals calculated, so that a proportional sampling can be focused on suspect areas (such as sumps):



- Area I Sample Station, 100' x 200', GI = 20
- * Area II (subset of I) Sample Station, 25' x 50', GI = 10'

- Sampling format should include either a) all grid point stations as determined by B.1., or b) using the Systematic Random Sampling Method as referenced in SW-846, Third Edition, Section 9.1.1.3.3, or c) using an approved "phased" method of grid coverage as described in B.1.
- Depth increments are dependent on the subsurface soils. For soil testing within the contaminated area 0.25 to 0.5 foot depth intervals for clays, and 1.0 to 5.0 foot depth intervals for silts-sands are recommended. The selection of depth increments also depends on initial soil contamination concentrations (i.e., at ground surface), mobility of contaminant, or height of liquid head on ground surface. Samples collected from specified depth(s) could be either single or in multiple replicates; depending on the statistical method to be used for background data comparison (see Section D). Compositing not recommended.

C. CONSTITUENT EVALUATION

1. For all compounds, sample collection, preservation, preparation, handling and analytical methods should follow U.S. EPA SW-846, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, or other EPA approved methods.
2. For organic constituents, non-detectable levels are generally used to delineate clean versus contaminated soils. Attachment 1 provides detection levels for various sample media.
3. For metals (for example: Ag, As, Ba, Cd, Cr, Cu, Hg, Mn, Ni, Pb, Se, and Zn), it is recommended to use a total metals, dry weight basis, reported in mg/kg test procedure. This minimizes additional sources of variation, since these constituents are naturally occurring.
4. For heavy metals, and waste specific non-organics, or as an alternative method for organics, background levels in native soils may be used as a baseline for measuring contamination. For organic constituents this must be approved by the Waste Management Division in writing prior to use.

If background sampling has established the presence of organic compounds in soils, then contamination would be determined by using an approved statistical method to evaluate the resultant data (see Section F). Any statistically significant increase above background will be considered contamination.

5. Type B Cleanup. Under Act 307, criteria have been developed for closures using both risk based levels and/or local background. Soils (and groundwater) meeting the Type B levels will be considered closed, and will not require further site control. For two-dimensional area verification, the grid approach in Section B can be used. To certify that a mass of soil is acceptable under Type B levels, the volume in question must be characterized as a whole, using three-dimensional sampling. The sampling protocol and strategies described in SW-846, Third Edition, Volume II, Part III, Chapter 9 are acceptable. Also refer to Section E, Attachment 2 and Attachment 3 of this document for further information.

D. STATISTICAL COMPARISONS

1. Careful consideration must be given to selection of a statistical procedure based on site-specific factors. These include the size of the background data base, variability of soil type, coefficient of variation of data, and the number of foreground samples available for comparison. The following are some recommended statistical methods from which to choose. Other statistical methods can be submitted for review and approval. Composite samples should not be used for statistical verification that Type A or Type B levels have been reached.

a. Empirical rule. Using mean (\bar{x}) and variance (S_b^2) of background values to establish an "upper limit"^b for delineating significant concentrations such as:

- 1) Calculate the background mean (\bar{x}_b) by dividing the sum of the total background readings by the total number of background readings:

$$\bar{x}_b = \frac{x_1 + x_2 + \dots + x_n}{n}$$

- 2) Calculate the background variance (S_b^2) by taking the sum of the squares of each reading minus the mean and dividing by the degrees of freedom (the total number of background samples minus one):

$$S_b^2 = \frac{(x_1 - \bar{x}_b)^2 + (x_2 - \bar{x}_b)^2 \dots (x_n - \bar{x}_b)^2}{n-1}$$

- 3) Calculate the background standard deviation (S_b) by taking the square root of the variance:

$$S_b = \sqrt{S_b^2}$$

- 4) The Coefficient of Variation Test (CV) where $CV = S/\bar{x}$ is used to evaluate data distribution. The background data should have a CV of less than 0.5 for sandy soils, less than 0.75 for finer soils, or an explanation accounting for higher CV values. The maximum recommended CV is 1.00. If the data distribution exceeds a CV of 1.00, then a thorough evaluation will need to be made to account for this variability (e.g., lab QA/QC, soil classification, sample location, etc.), and the outlier data dropped. Additional samples may need to be analyzed to ensure a sufficient data base population (n) is achieved.

- 5) Use the $\bar{x}_b + 3S$ of "background" data as the maximum allowable limit or upper limit. Where 3S equals three times the standard deviation, and \bar{x}_b equals the background mean. (Note: This statistical method only requires one sample per station.)

b. Tolerance Limit. This statistical procedure is a fairly sensitive program for environmental purposes. It minimizes false positives, and is simple to perform. A minimum background data base of n=8 (optimum n=16) is needed for this method. Other suggested criteria are as follows:

- 1) The Coefficient of Variation Test (CV) to evaluate data distribution. See item D.1.a.4 above.
- 2) Using the mean (\bar{x}) and standard deviation (S), construct the one-sided upper tolerance limit (TL) by taking the mean plus a tolerance coefficient (K) at the 95% probability level for a 95% coverage (for K values, please see Attachment 4) times the standard deviation as follows:

$$TL = \bar{x} + KS$$

- c. T-test. Any t-test should be "approved" by WMD prior to use since there are a number of variations. Note that this method requires at least two or more discrete samples to be taken at each sampling station. We recommend the Gosset Student T-test (1908) where:

$$t = \frac{|\bar{x} - \bar{y}|}{S \sqrt{\frac{1}{N} + \frac{1}{M}}}$$

with $S = \sqrt{\frac{M(s_1)^2 + N(s_2)^2}{N + M - 2}}$

$$\left. \begin{array}{l} N = n_1 \\ M = n_2 \end{array} \right\} \text{---}$$

$$\left. \begin{array}{l} \bar{x} = \bar{x}_1 \\ \bar{y} = \bar{x}_2 \end{array} \right\}$$

- d. Cochran's Approximation to the Behrens-Fisher Student's t-test is also available for evaluating background variance versus exceedances (i.e., contamination) as referenced in the 40 CFR Part 264, Appendix IV. Note that this statistical comparison method does require that two or more discrete samples be taken at each sampling station.

2. Procedures for non-detect values. If more than 50% of the background data are below the detection limit (DL), it is recommended to use either of the following procedures for any of the preceding statistical methods:

- a. Alternate "0" and the detection limit (DL) resulting in a net value of half the detection limit, with a variance,

Example:	<u>Actual Value</u>	<u>Substitute Value</u>
	<DL	DL
	<DL	0
	<DL	DL
	<DL	0

OR

- b. The Continuity Correction procedure with the t-test. If the background data is non-detect, then use $S = .25 \times DL$ (Attachment 5 explains how to perform the t-test with Continuity Correction.)

3. A tabulation of typical background levels of metals for Michigan soils has been compiled and is included as Attachment 6. This data can be used as a reference to evaluate actual on-site background data.

E. ACT 307 P.A. 1982, AS AMENDED, ADOPTION OF TYPE A AND TYPE B CLEANUP STANDARDS

Since the Act 307 standards represent the Department's judgment about what is protective of the public health, safety, welfare, and the environment, the WMD will utilize the Type A and Type B Cleanup Standards referenced in Part 7 of the Act 307 rules as acceptable for clean closure documentation under Act 64. Type C is available, but it would result in post-closure requirements.

Briefly, Type A criteria are based on the reduction of hazardous substance concentrations to background levels or to analytical limits of detection. Type B criteria are based on reduction of hazardous substance concentrations to an acceptable risk level using standardized exposure assumptions. Type C is an in place contained/controlled closure which must meet Act 64 landfill closure requirements.

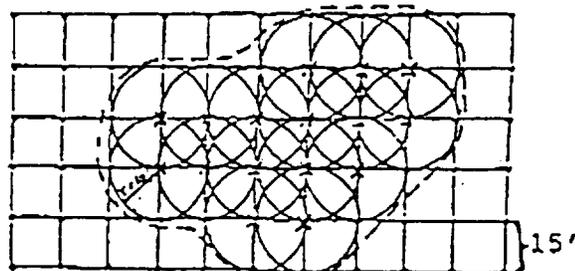
The cleanup type proposed is at the option of the party proposing the clean closure plan, subject to review and approval by WMD. For further reference on these cleanup criteria, please refer to Section C.5, and Attachment 1, Attachment 2, and Attachment 3 of this document.

F. EXCAVATION

1. Two-Dimensional Excavation Grid. Excavation of contaminated areas should be based on the established grid system interval (as recommended in B.1). The radius of excavation around the contaminated sample point(s) is equal to the grid interval ($GI = r$). Excavation depth is to the deepest point of contamination, or to the depth where Type B levels are anticipated. After excavation, the impacted point(s) and adjacent grid points must be resampled to verify that the area meets the selected cleanup criteria. If continued contamination is detected, the excavation format is repeated until a satisfactory result is obtained.

Example:

GL = 150 ft.
 A = 11,250 sq. ft.
 GI = 14.9 ft.



. Sample Station
 x Contaminated Station
 r = GI = 15 feet

Contaminated soil removal in granular non-cohesive (sands, gravels) soils may stop at the water table, if encountered. Waste material, however, must be removed, even if it is below the water table. If contaminated soils remain, groundwater monitoring must be conducted to check for contamination. If groundwater contamination is found, a plan to manage and treat the plume must be developed by the facility, approved by WMD, and implemented by the facility.

2. Three-Dimensional Soil Characterization. If soil sampling and statistical analysis under Section C.5 of this document indicate that Type B criteria have not been met, the mass of soil in question must be excavated and properly disposed (see Section G for Disposal Options). If any portion of the soil mass in question appears to be causing the material to fail, it may be identified through sampling, and selectively removed. Subsequent sampling must be done to confirm that the remaining material meets Type B levels.

G. DISPOSAL OPTIONS

Disposal of excavated waste or soil, and purged groundwater must be in accordance with all applicable Federal, State, and local regulations. For example, air stripping of contaminated groundwater requires a permit from Air Quality Division. Disposal options include:

1. Removal for incineration.
2. Removal for treatment.
3. Removal for landfilling.
4. In-place treatment/stabilization.
5. Encapsulation/migration control.

Proposals for new or innovative technologies or solutions will also be considered. Specific situations are discussed below for off-site disposal options according to the current Michigan regulations. It must first be determined if the waste and the facility in question are regulated under RCRA and Act 64 (Hazardous Waste Laws).

ACT 64/RCRA REGULATED HAZARDOUS WASTE SITES

Waste Material

- o Listed hazardous waste - must go to Act 64/RCRA permitted treatment, storage or disposal facility (TSD). Additionally, the material must meet land ban criteria to allow disposal at a land disposal facility.

- o Characteristic hazardous waste - must go to Act 64/RCRA TSD, or if treatment renders material nonhazardous, to Act 641 landfill or incinerator. Additionally, the material must meet land ban criteria to allow disposal at a land disposal facility.

Soils

- o If EP Toxic/TCLP, or from listed hazardous waste, the contaminated soils must go to an Act 64/RCRA TSD. Additionally, the material must meet land ban criteria to allow disposal at a land disposal facility. If soil was not contaminated by a listed waste, and the concentrations are not EP Toxic/TCLP or do not exhibit other hazardous waste characteristics, but still above the cleanup criteria, they can go to an approved Act 641 landfill.
- o A determination that the contaminated soils do not meet the reactivity criteria set forth in 40 CFR §261.23 must be made. If soils are found reactive, no landfilling is allowed. Soils/wastes must be treated so that they are no longer reactive.
- o If soil concentrations are above background but can be demonstrated to meet the inert designation (as approved by the Waste Evaluation Unit, WMD), then soils may be allowed to remain in place.

NONREGULATED (ACT 64/RCRA) SITES/REAL ESTATE TRANSACTIONS

Concerned parties should contact appropriate divisions (e.g., WMD or ERD) for more specific information and procedures.

Waste Material

- o Characteristic - If ignitable, reactive, corrosive, or EP Toxic/TCLP, then waste must go to a licensed hazardous waste treatment facility and land ban. If not characteristic, then waste may go to an Act 64/RCRA treatment or disposal facility, or an Act 641 landfill, if approved.

Soils

- o Metals - If soils are contaminated with metals that are not listed or are not EP Toxic/TCLP, but above background, soil may go to an Act 641 landfill.
- o Reactive - If not reactive, or if pretreated so that it is no longer reactive, soil may go to an Act 641 landfill.
- o Organics - Soils must go to a licensed Act 64/RCRA TSD facility if hazardous.
- o Inert designation - If soil concentrations are above background but meet the criteria for an inert designation, then the soils may be allowed to remain in place.

H. CLEAN CLOSURE CERTIFICATION CHECKLIST

Attachment 7 is a guidance document that indicates the information that a facility should provide to certify that their activities met the conditions for a clean closure under the Act 64/RCRA regulations.

Attachment 1 - Analytical Detection Level Guidance

Attachment 2 - Sampling Protocol for Characterizing Waste/Treatment Levels

Attachment 3 - Act 307, Rule 711, Pathways Analysis (routes of exposure)

Attachment 4 - Tolerance Factors (K) [NTIS Document PB-89-151-047, Table 5]

Attachment 5 - Continuity Correction

Attachment 6 - Michigan Background Soils Data

Attachment 7 - Clean Closure Certification Checklist

ATTACHMENT 3

Act 307, P.A. 1982, as amended, Rule 711 Pathways Analysis (routes of exposure)

Rule 711 addresses compliance with Type B criteria for soils. Various routes of exposure need to be examined to assure that the criteria are met. Minimum items to be discussed are:

1. Ground Water (GW) Protection

To determine the limit in soil to assure no ground water threat, two options may be used:

- a. Multiply the concentration of the contaminant in the groundwater X 20. The 20 is the TCLP dilution factor. If the number from this equation is < the soil criteria, it passes this test (due to the dilution step in the TCLP).
- b. A leachate analysis can be run on the material in question to determine if it exceeds the GW Criteria. The TCLP is an acceptable procedure. Other leachate tests can be requested, but need approval on a case-by-case basis.

NOTE: The GW Criteria can be determined in three ways. The leachate can meet Type A levels, Type B levels, or the leachate concentration derived from background soils.

2. Surface Water Protection

Measures need to be implemented to assure that no runoff or transport of contaminated soils occurs that would cause hazardous substances to enter the surface water at levels that exceed Act 245 standards. These standards shall be applied without mixing zone criteria. This item encourages the use of effective erosion control measures.

3. Inhalation Protection

Any releases to the air should be below a level that, in combination with any other contaminants present in the air, will not present injurious effects. This includes verification that the level will be below an increased cancer risk of 1 in 1,000,000, or that will not injure human health, safety and welfare; animal life; plant life of significant value; or to property. The main contaminant of concern that has been identified for this route is asbestos.

4. Direct Human Contact Protection (Ingestion/Absorption)

The following equation may be applied:

$$\text{Criteria} = \frac{\text{RfD}(\text{mg/d}) \times 0.2 \times 1000}{(0.09\text{g/d} \times 1) + (0.9\text{g/d} \times 0.1)}$$

RfD = reference dose (target dose in mg/kg/day)

0.2 = source contribution (20%)

1000 = conversion to ppm

0.09 - daily soil consumption

1 and 0.1 - absorption efficiencies

0.9 - daily skin contact

Other equations are expressed and defined under R 299.5711(5).

5. Miscellaneous Factors

Other factors to be considered include:

- a. Food chain contamination
- b. Damage impairing the use of soil for agricultural purposes
- c. Phytotoxicity (plant poison)
- d. Physical hazards
- e. Nonsystemic or acute toxic effects
- f. Other injury

This set of factors was developed to allow site specific or contaminant specific concerns to be addressed when the Director determines that the Type B standard may need to be lower. In some cases, widely accepted toxicological data bases or approaches were not available to develop a chart or equation (items a, c, e). For other categories, non-traditional contaminants were of concern (Na and Cl for item b).

It is to be assumed that any point will be accessible for contact or exposure considerations [R 299.5711(7)]. Contamination at some depth below the ground, or that is slated to be built over still must meet the Type B criteria for acceptance.

K

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM PERMITS (NPDES)

- K1 BRONSON WASTE WATER TREATMENT PLANT
NPDES PERMIT
- K2 BRONSON PLATING NPDES PERMIT

K1

BRONSON WASTE WATER
TREATMENT PLANT NPDES PERMIT

MICHIGAN WATER RESOURCES COMMISSION
AUTHORIZATION TO DISCHARGE UNDER THE
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of the Federal Water Pollution Control Act, as amended, (33 U.S.C. 1251 et seq; the "Act"), Michigan Act 98, Public Acts of 1913, as amended, being sections 325.201 through 325.214 of the Compiled Laws of Michigan, and the Michigan Water Resources Commission Act, as amended, (Act 245, Public Acts of 1929, as amended, being sections 323.1 through 323.13 of the Compiled Laws of Michigan, the "Michigan Act"),

City of Bronson
141 South Matteson
Bronson, Michigan 49028

is authorized to discharge from a facility located at

8 Mill Street
Bronson, Michigan 49028

designated as the Bronson WWTP

to the receiving water named the Big Swan Creek via County Drain No. 30 in accordance with effluent limitations, monitoring requirements and other conditions set forth in this permit.

This permit takes effect on May 1, 1991. Any person who feels aggrieved by this permit may file a sworn petition with the Executive Secretary of the Michigan Water Resources Commission, setting forth the conditions of the permit which are being challenged and specifying the grounds for the challenge. The Commission may reject any petition filed more than 60 days after issuance as being untimely. Upon granting of a contested case to the applicant, the Commission shall review the permit to determine which contested terms shall be stayed until the Commission takes its final action. If a contested condition is a requirement placed on wastewater covered by a new or increased discharge authorization, such increased discharge authorization shall be stayed until the Commission takes final action. All other conditions of the permit remain in full effect. If the contested condition is a modification of a previous permit condition and the Commission determines the contested condition shall be stayed, then such previous condition remains in effect until the Commission takes final action. During the course of any administrative proceeding brought by a person other than the applicant, the conditions of this permit will remain in effect, unless the Commission determines otherwise.

This permit and the authorization to discharge shall expire at midnight October 1, 1995. In order to receive authorization to discharge beyond the date of expiration, the permittee shall submit such information and forms as are required by the Michigan Water Resources Commission to the Permits Section of the Surface Water Quality Division no later than 180 days prior to the date of expiration.

This permit is based on an application submitted on September 20, 1989. On its effective date this permit shall supersede NPDES Permit No. MI0020729, expiring March 31, 1980.

Issued this 21st day of February, 1991, by the Michigan Water Resources Commission.


Paul D. Zugger
Executive Secretary

PART I

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

1. Interim Effluent Limitations, Outfall 001:

a. During the period beginning on May 1, 1991 and lasting until July 1, 1994 the permittee is authorized to discharge treated municipal wastewaters from the Bronson wastewater treatment plant through outfall 001 to Big Swan Creek via County Drain No. 30. Such discharges shall be limited and monitored by the permittee as follows:

Effluent Characteristic	Dates In Effect	Discharge Limitations			
		Daily Minimum	Daily Maximum	30-Day Average	7-Day Average
Flow (in MGD)	All Year	--	(report)	(report)	--
Biochemical Oxygen Demand (BOD)	All Year	--	38 mg/l	25 mg/l 104 lb/d	-- 158 lb/d
Total Suspended Solids	All Year	--	--	30 mg/l	45 mg/l
Ammonia Nitrogen (as N)	All Year	--	Monitor 5x Weekly	--	--
Total Phosphorus (as P)	All Year	--	--	1.0 mg/l*	--
Dissolved Oxygen	All Year	3.0 mg/l	--	--	--
Fecal Coliform Bacteria	05/01-10/31 All Year begin. 05/01/92	--	--	200/100ml 200/100ml	400/100ml 400/100ml
Total Residual Chlorine	All Year begin 05/01/92	--	0.5 mg/l	--	--
Total Copper	All Year begin. 7/1/91	--	116 ug/l	30 ug/l	--
pH (standard units)	All Year	6.5	9.0	--	--

* Phosphorus Limitation - Effluent shall contain as a maximum not more than 20 per cent (20%) of the total phosphorus contained in the sewage and the industrial waste prior to treatment and, insofar as optimum operations of the facilities will attain such a level, shall contain not more than 1.0 mg/l of total phosphorus.

The following design flows were used in determining the above limitations, but are not to be considered limitations or actual capacities themselves: 0.5 MGD.

PART I

Section A.1. (continued)

b. Sampling Frequency - Effluent characteristics shall be measured at the following frequency: Flow shall be measured daily. BOD, Total Suspended Solids, Dissolved Oxygen, Ammonia Nitrogen, Fecal Coliform, pH, and Total Residual Chlorine shall be measured 5x week. Total Phosphorus and Total Copper shall be measured weekly.

c. Sampling Type and Location

(1) The sampling for BOD, Total Suspended Solids, Ammonia Nitrogen, Copper, and Total Phosphorus shall be 24-hour composites taken prior to disinfection. The sampling for Dissolved Oxygen, Fecal Coliform Bacteria, Total Residual Chlorine, and pH shall be grab samples taken of the effluent.

(2) Compliance with the Total Residual Chlorine limit shall be determined on the basis of one or more grab samples. If more than one sample per day is taken, the additional samples shall be collected in near equal intervals over at least 8 hours. The samples shall be analyzed immediately upon collection and the average reported as the daily maximum. The level of detection shall be determined for the analytical method used by following the procedures prescribed in 40 CFR 136 Appendix B. The reported level of detection shall not exceed 0.036 mg/l unless a higher level is appropriate because of sample matrix interference.

d. During the period that Fecal Coliform Bacteria limitations are in effect, the permittee shall provide adequate control and facilities to ensure continuous disinfection.

e. Demonstration Opportunity Regarding Total Residual Chlorine

(1) Final Acute Value - The permittee may demonstrate to the Michigan Water Resources Commission that a total residual chlorine limitation greater than the final acute value of 0.036 mg/l is acceptable under the Water Quality Standards. Such demonstration may establish that: a) fish cannot physically inhabit the zone where concentrations of total residual chlorine are greater than 0.036 mg/l, b) toxicity tests, using species and/or water more representative of the discharge point, result in a higher final acute value, c) there is extremely high and immediate dilution, or d) other rationale warrants a less restrictive limitation for total residual chlorine.

(2) Compliance Deadline - The permittee may demonstrate to the Michigan Water Resources Commission that it is necessary and appropriate to postpone the effective date of the total residual chlorine limitation considering the present efficiency of disinfection, age of chlorination equipment and the economic and technical feasibility of compliance.

(3) Demonstration Notification - The permittee shall notify the Jackson District Supervisor of the Surface Water Quality Division if a demonstration under (1) or (2) above will be attempted. The notification shall include a work plan for completion of the demonstration. The effective date of the total residual chlorine limitation shall not be stayed pending the demonstration project. All submittals shall be directed to the Jackson District Supervisor of the Surface Water Quality Division.

PART I

Section A.

2. Final Effluent Limitations, Outfall 001:

a. During the period beginning on July 1, 1994 and lasting until expiration of this permit, the permittee is authorized to discharge treated municipal wastewaters from the Bronson wastewater treatment plant through outfall 001 to Big Swan Creek via County Drain No. 30. Such discharges shall be limited and monitored by the permittee as follows:

Effluent Characteristic	Dates In Effect	Discharge Limitations			
		Daily Minimum	Daily Maximum	30-Day Average	7-Day Average
Flow (in MGD)	All Year	--	(report)	(report)	--
Carbonaceous Biochemical Oxygen Demand (CBOD ₅)	05/01-09/30	--	10 mg/l	4 mg/l 16.7 lb/d	-- 41.7 lb/d
	10/01-11/30	--	16 mg/l	11 mg/l 45.9 lb/d	-- 66.7 lb/d
	12/01-04/30	--	38 mg/l	25 mg/l 104.2 lb/d	-- 158.5 lb/d
Total Suspended Solids	05/01-09/30	--	--	20 mg/l	30 mg/l
	10/01-04/30	--	--	30 mg/l	45 mg/l
Ammonia Nitrogen (as N)	05/01-09/30	--	2.0	0.5 mg/l	--
	10/01-11/30	--	5.8 mg/l	--	--
	12/01-04/30	--	15 mg/l	--	--
Total Phosphorus (as P)	All Year	--	--	0.32 mg/l 490 lb/yr	--
Dissolved Oxygen	All Year	3.0 mg/l	--	--	--
Fecal Coliform Bacteria	All Year	--	--	200/100ml	400/100ml
Total Residual Chlorine	All Year	--	0.036 mg/l	--	--
Total Copper	All Year	--	116 ug/l	30 ug/l	--
pH (standard units)	All Year	6.5	9.0	--	--
Chronic Toxicity	All Year	--	--	1.7 TU _c **	--

** TU means chronic toxic unit. The term "chronic toxic unit" is defined as the reciprocal of the effluent's maximum acceptable toxicant concentration (MATC) expressed with 100 as the numerator and the MATC as a percentage in the denominator. Maximum acceptable toxicant concentration is defined in Rule 43(q) of the Part 4 Rules of the Michigan Water Resources Commission.

The following design flows were used in determining the above limitations, but are not to be considered limitations or actual capacities themselves: 0.5 MGD.

PART I

Section A. (continued)

b. Sampling Frequency - The effluent characteristics shall be measured at the following frequency: Flow shall be measured daily. Total Phosphorus and Total Copper shall be measured weekly. Chronic toxicity shall be measured quarterly in January, April, July, and October. Results of such testing shall be reported in the DMR for the month following the test. All other parameters shall be measured 5x weekly.

c. Sampling Type and Location

(1) The sampling for CBOD₅, Total Suspended Solids, Ammonia Nitrogen, Chronic Toxicity, and Total Phosphorus shall be 24-hour composites taken prior to disinfection. The sampling for Dissolved Oxygen, Fecal Coliform Bacteria, Total Residual Chlorine, Copper, and pH shall be grab samples taken of the effluent.

(2) Compliance with the Total Residual Chlorine limit shall be determined on the basis of one or more grab samples. If more than one sample per day is taken, the additional samples shall be collected in near equal intervals over at least 8 hours. The samples shall be analyzed immediately upon collection and the average reported as the daily maximum. The level of detection shall be determined for the analytical method used by following the procedures prescribed in 40 CFR 136 Appendix B. The reported level of detection shall not exceed 0.036 mg/l unless a higher level is appropriate because of sample matrix interference.

d. During the period that Fecal Coliform Bacteria limitations are in effect, the permittee shall provide adequate control and facilities to ensure continuous disinfection.

e. Demonstration Opportunity Regarding Total Residual Chlorine

(1) Final Acute Value - The permittee may demonstrate to the Michigan Water Resources Commission that a total residual chlorine limitation greater than the final acute value of 0.036 mg/l is acceptable under the Water Quality Standards. Such demonstration may establish that: a) fish cannot physically inhabit the zone where concentrations of total residual chlorine are greater than 0.036 mg/l, b) toxicity tests, using species and/or water more representative of the discharge point, result in a higher final acute value, c) there is extremely high and immediate dilution, or d) other rationale warrants a less restrictive limitation for total residual chlorine.

(2) Compliance Deadline - The permittee may demonstrate to the Michigan Water Resources Commission that it is necessary and appropriate to postpone the effective date of the total residual chlorine limitation considering the present efficiency of disinfection, age of chlorination equipment and the economic and technical feasibility of compliance.

(3) Demonstration Notification - The permittee shall notify the Jackson District Supervisor of the Surface Water Quality Division if a demonstration under (1) or (2) above will be attempted. The notification shall include a work plan for completion of the demonstration. The effective date of the total residual chlorine limitation shall not be stayed pending the demonstration project. All submittals shall be directed to the Jackson District Supervisor of the Surface Water Quality Division.

PART I

Section A.

3. Special Condition - Short Term Waste Characterization Study

As a condition of this permit, the permittee shall monitor the discharge from outfall 001 for the constituents, at the frequency, and for the duration specified below. This monitoring is designed to determine whether these constituents are discharged in significant quantities. The results of the analysis of such monitoring shall be submitted to the Jackson District Supervisor of the Surface Water Quality Division on or before March 1, 1995 and in accordance with Part I.D.5., Schedule of Compliance. If, upon review of the analysis, it is determined that any of the materials or constituents require limiting to protect the receiving waters in accordance with applicable water quality standards, the permit may then be modified after public notice and Commission approval of the recommended permit modification in accordance with Part II.D.4.

<u>CONSTITUENT</u>	<u>SAMPLE TYPE</u>	<u>SAMPLE FREQUENCY</u>	<u>SAMPLE DURATION</u>	<u>ANALYTICAL METHOD</u>
Arsenic	24-hr Comp	Weekly	6 Weeks	EPA Approved
Total Cadmium	24-hr Comp	Weekly	6 Weeks	EPA Approved
Total Chromium	24-hr Comp	Weekly	6 Weeks	EPA Approved
Hexavalent Chromium	Grab	Weekly	6 Weeks	EPA Approved
Total Lead	24-hr Comp	Weekly	6 Weeks	EPA Approved
Total Mercury	24-hr Comp	Weekly	6 Weeks	EPA 245.1
Total Nickel	24-hr Comp	Weekly	6 Weeks	EPA Approved
Total Silver	24-hr Comp	Weekly	6 Weeks	EPA Approved
Total Zinc	24-hr Comp	Weekly	6 Weeks	EPA Approved
Cyanide, Amenable	24-hr Comp	Weekly	6 Weeks	EPA Approved

Metals shall be measured at the following detection levels: Arsenic (5 ug/l), Cadmium (0.2 ug/l), Total Chromium (10 ug/l), Hexavalent Chromium (5 ug/l), Copper (10 ug/l), Lead (1 ug/l), Mercury (0.5 ug/l), Nickel (50 ug/l), Silver (0.2 ug/l), Zinc (50 ug/l). Amenable Cyanide shall be measured at a detection level of 5 ug/l.

PART I

Section A.

4. Special Condition - Biomonitoring Plan

a. On or before July 1, 1994, the permittee shall submit an approvable biomonitoring plan outlining specific testing and reporting procedures to the Jackson District Supervisor of the Surface Water Quality Division for approval. The plan shall include chronic toxicity tests on two (2) test species using final effluent from outfall 001. The toxicity tests shall be conducted after approval of the biomonitoring plan. Test species shall include fathead minnows and Daphnia or Ceriodaphnia. Alternate test species may be used upon approval of the Jackson District Supervisor of the Surface Water Quality Division. Testing and reporting procedures shall follow procedures contained in EPA/600/4-89/001, "Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms", for fathead minnow and Ceriodaphnia or ASTM E 1193-87, "Standard Guide for Conducting Renewal Life-Cycle Toxicity Tests with Daphnia Magna" for Daphnia. Alternate methods may be used upon approval of the Jackson District Supervisor of the Surface Water Quality Division.

b. The permittee shall implement the biomonitoring plan within 60 days after approval of the Jackson District Supervisor.

5. Special Condition - Chronic Toxicity Testing

The permittee shall conduct chronic toxicity tests on the discharge from outfall 001 according to the procedures in the approved biomonitoring plan specified in Part I.A.4.

a. Where any one monitoring event shows an exceedance of the 1.7 TU^c limit for effluent toxicity, the permittee shall increase the frequency of toxicity testing to monthly for a period of two months. The results of these tests shall be submitted to the Jackson District Supervisor of the Surface Water Quality Division within 14 days of the completion of the final test. The Chief of the Surface Water Quality Division shall determine whether the permittee must implement the toxicity control program requirements specified in b. below; or if the permittee may return to the quarterly frequency for measuring the chronic toxicity in outfall 001.

b. Upon written notification of the Chief of the Surface Water Quality Division the following conditions apply:

(1) Within 90 days of the above notification, the permittee shall submit a toxicity identification/reduction evaluation (TI/RE) plan to the Jackson District Supervisor of the Surface Water Quality Division. The TI/RE plan shall include appropriate measures to comply with the final chronic toxicity limit of 1.7 TU^c, monitoring to show effectiveness of the toxicity control program, and a schedule to implement the plan.

(2) The permittee shall implement the TI/RE plan in accordance with the schedule contained in the plan.

PART I

Section A.

6. Special Condition - Toxicity Identification/Reduction Evaluation

a. On or before three (3) months after the effective date, the permittee shall submit a Toxicity identification/Reduction Evaluation (TI/RE) plan to the Jackson District Supervisor of the Surface Water Quality Division for review. The TI/RE Plan shall include appropriate measures to reduce effluent toxicity in outfall 001 to a level which complies with the final chronic toxicity limit specified in Part I.A.2.

b. The permittee shall implement the approved TI/RE Plan in accordance with the schedule approved by the Jackson District Supervisor.

This permit may be modified in accordance with Part II.D.4. to include additional toxicity requirements as necessary.

PART I

Section A. (continued)

7. Special Condition - Notification Requirement

The permittee shall notify the Jackson District Supervisor of the Surface Water Quality Division, in writing, within 10 days of knowing, or having reason to believe, that any activity or change has occurred or will occur which would result in the discharge of:

- a. Detectable levels* of chemicals on the current Michigan Critical Materials Register or priority pollutants or hazardous substances set forth in 40 CFR 122.21, Appendix D, which were not acknowledged in the application** or listed in the application at less than detectable levels.
- b. Detectable levels* of any other chemical not listed in the application or listed at less than detection, for which the application specifically requested information.
- c. Any chemical at levels greater than five times the average level reported in the application**.

Any other monitoring results obtained as a requirement of this permit shall be reported in accordance with the schedule of compliance.

*The detectable level shall be defined as the Method Detection Limit (MDL) as given in Appendix B to Part 136, Federal Register, Vol. 49, No. 209, October 26, 1984, pp. 43430-31.

**The application submitted on September 20, 1989.

8. Discharge to the Groundwaters

The reissuance of this permit does not authorize any discharge to the groundwaters. Such discharge must be authorized by a groundwater discharge permit issued pursuant to Act 245, Public Acts of 1929, as amended.

PART I

B. INDUSTRIAL WASTE PRETREATMENT PROGRAM

On or before June 1, 1991, the permittee shall submit the results of a User Survey which includes the identification of NonDomestic Users of the waste collection system. The submittal shall designate various NonDomestic Users as Major Users and explain the rationale used in the designation. For all NonDomestic Users, the following information shall be included:

1. The name and mailing address of all NonDomestic Users of the waste collection system, including both local facility address and main office address, if different;
2. The principal enterprise of the user including, if appropriate, the product(s) produced or raw material(s) processed and the quantity per unit time. An indication of the magnitude of the enterprise should be given. All facilities in industrial classifications identified by the Environmental Protection Agency (EPA) as being subject to pretreatment control shall be identified by Standard Industrial Classification (SIC) codes;
3. The quantity of wastewater discharged daily and whether the discharge is intermittent or continuous;
4. A description of any pretreatment provided prior to discharge to the waste collection system;
5. A qualitative description of the wastewater character in terms of appropriate parameters and concentrations (Appropriate parameters includes the Federal EPA List of Priority Pollutants and Michigan Critical Materials Register. If you need to obtain either list, contact the Surface Water Quality Division.);, and
6. A list of all chemicals used for process, cooling water, boiler water, or other purposes with an indication of quantity used and disposition of spent chemicals.

If information is gained by this survey that warrants the development of a control program, this permit may be modified in accordance with Part II.D.4 of this permit to incorporate the requirements of Section 307 of the Act.

PART I

C. PROGRAM FOR EFFECTIVE RESIDUALS MANAGEMENT

In addition to the requirements in Part II.C.7. in this permit, the permittee shall provide for the effective management and/or disposal of residuals, i.e., solids, sludges, ash, grit and other substances removed from or resulting from treatment of the wastewater. Residuals disposal shall be accomplished in such manner and at such locations that the disposal practices shall not result in unlawful pollution of the air, surface waters or ground waters of the state nor create nuisance conditions. Such management and/or disposal program shall be set forth in a "Program for Effective Residuals Management" prepared by the permittee.

The program shall include:

- (1) a management plan (treatment, transportation, storage, disposal, contingency plans);
- (2) an inventory of residuals production, storage, and disposal for a period of at least one year;
- (3) an analysis of the residuals;
- (4) a monitoring program;
- (5) if land application is proposed, include site maps, soil analyses, application rates, proposed vegetation and other pertinent information; and
- (6) if groundwater degradation potential exists, include a hydrogeologic study.

A program has previously been submitted to and approved by the Jackson District Supervisor of the Surface Water Quality Division. The permittee shall certify that current and future residuals management practices are in accordance with the approved program or the permittee shall submit proposed modifications to the approved program. The program certification or proposed modifications shall be submitted to and receive the approval of the Jackson District Supervisor of the Surface Water Quality Division on or before June 1, 1991.

Disposal of residuals resulting from the treatment of wastewater shall be in accordance with the previously approved program until proposed modifications are approved. If at any time the permittee desires to make any substantial changes in the approved program, the proposed changes shall be submitted to and approved by the Jackson District Supervisor of the Surface Water Quality Division prior to implementation. Substantial changes shall include, but not be limited to: a change in disposal method or site; a change in treatment method; a change in storage method or site; a change in monitoring parameters or monitoring frequency; an increase in application rate; or a change in residuals quantity or characteristics. Any residual disposal inconsistent with the approved program shall be considered a violation of this permit.

PART I

D. SCHEDULE OF COMPLIANCE

1. Reapplication

If the discharges authorized by this permit are expected to continue beyond the expiration date of this permit, the permittee is required to submit an application for reissuance to the Chief of the Permits Section of the Surface Water Quality Division on or before April 1, 1995.

2. Schedule of Compliance for Meeting New Toxicant Effluent Limitations

a. On or before May 1, 1991, the permittee shall complete and submit to the Jackson District Supervisor of the Surface Water Quality Division, a plan for complying with the effluent limitations for Total Copper, which become effective on July 1, 1991. The plan shall consider additional influent, effluent, and sludge monitoring; reevaluation of local limits; notification of nondomestic users; additional nondomestic user monitoring; availability of pretreatment technologies for achieving proposed new local limits; promulgation of new local limits; and time needed for accomplishment of needed tasks by the permittee and affected nondomestic users.

b. On or before July 1, 1991, the permittee shall commence implementation of its plan for complying with the new toxicant effluent limitations.

3. Facility Construction for Final Effluent Limitations

The permittee shall achieve compliance with the Final Effluent Limitations specified in this permit for outfall 001 in accordance with the following:

a. Submit a plan for achieving compliance with final effluent limits by September 1, 1991.

b. Submit a status report to the Jackson District Supervisor of the Surface Water Quality Division on the progress of project planning, design and construction at intervals not to exceed nine months beginning on March 1, 1992, and continuing until full compliance with the Final Effluent Limitations is achieved.

c. Final plans and specifications shall be submitted to and approved by the Jackson District Supervisor of the Surface Water Quality Division on or before June 1, 1992.

d. Commence construction on or before December 1, 1992.

e. Complete construction on or before April 1, 1994.

f. Facilities shall achieve operational level on or before July 1, 1994.

PART I

Section D.

4. Sixty days prior to startup of new or expanded wastewater treatment facilities, the permittee shall notify the Jackson District Supervisor of the Surface Water Quality Division.

5. Schedule of Compliance for Short-Term Waste Characterization

The permittee shall achieve compliance with the Short Term Waste Characterization Study requirements specified in Part I.A.3., in accordance with the following schedule. All submittals shall be to the Jackson District Supervisor of the Surface Water Quality Division.

- a. On or before September 1, 1994, the permittee shall implement the study.
- b. On or before March 1, 1995, the permittee shall have completed all monitoring as required.
- c. On or before March 1, 1995, the permittee shall submit the analytical results of such monitoring.

6. Written Notification Required

Within 14 days of every requirement date specified in this permit, the permittee shall submit a written notification to the Jackson District Supervisor of the Surface Water Quality Division indicating whether or not the particular requirement was accomplished. If the requirement was not accomplished, the notification shall include an explanation of the failure to accomplish the requirement, actions taken or planned by the permittee to correct the situation, and an estimate of when the requirement will be accomplished. If a written report is required to be submitted by a specified date and the permittee accomplishes this, a separate written notification is not required.

PART II

A. REPORTING, DEFINITIONS, AND MONITORING

1. Reporting

The permittee shall effectively monitor the operation of all processes comprising the treatment and control facilities. Monitoring data required by this permit and other data required by the Surface Water Quality Division shall be tabulated and summarized on a calendar month basis. Discharge Monitoring Reports, on forms supplied by the Surface Water Quality Division, shall be mailed to the address below, postmarked no later than the tenth (10th) of the first month following the report period.

Department of Natural Resources
 SWQD - Data Entry
 P.O. Box 30028
 Lansing, Michigan 48909

2. Definitions

a. 30-Day Average Concentration

The 30-day average concentration is defined as the sum of the concentrations of the individual samples divided by the number of samples taken during a calendar month. If the pollutant concentration in any sample is less than the detection limit, regard that value as zero when calculating monthly average concentration. The 30-day average concentration for fecal coliform bacteria is defined as the geometric mean of the samples collected in a calendar month.

b. 7-Day Average Concentration

The 7-day average concentration is defined as the sum of the concentrations of the individual samples divided by the number of samples taken during any 7 consecutive day period of a calendar month. The exception to this is the 7-day average concentration for fecal coliform bacteria. This is defined as the geometric mean of the samples collected in any 7 consecutive day period of a calendar month.

c. 30-Day Average Load

The 30-day average load is defined as the sum of the weights of pollutants discharged on sampling days divided by the number of sampling days during a calendar month.

d. 7-Day Average Load

The 7-day average load is defined as the sum of the weights of pollutants discharged on sampling days divided by the number of sampling days during any 7 consecutive days in a calendar month.

e. Maximum Concentration

The maximum concentration is defined as the maximum concentration of a pollutant in any individual sample.

f. Maximum Load

The maximum load is defined as the maximum weight of a pollutant discharged in any single day.

PART II

Section A.2. (continued)

g. 24-Hour Composite Sample

24-hour composite sample is defined as a flow proportioned composite sample consisting of hourly or more frequent portions.

h. Grab Sample

Grab sample is defined as a single sample of wastewater taken at neither set time nor flow.

i. Nondomestic User

A nondomestic user is defined as any discharger to the permittee's treatment works that discharges wastes other than or in addition to water-carried wastes from toilet, kitchen, laundry, bathing or other facilities used for household purposes.

j. Major User

A major user is defined as a nondomestic user that:

- (1) discharges more than 10,000 gallons per average working day to the permittee's treatment works; or
- (2) discharges any toxic or hazardous materials such as, but not limited to, those listed on the Federal EPA List of Priority Pollutants and Michigan Critical Materials Register (for a copy of either list, contact the Surface Water Quality Division); or
- (3) discharges any substance that may cause interference with the operation of the treatment works, and is considered to be of significance to the overall treatment and disposal processes.

k. Interference

Interference is defined as a discharge which, alone or in conjunction with a discharge or discharges from other sources, both:

- (1) Inhibits or disrupts the POTW, its treatment processes or operations, or its sludge processes, use or disposal; and
- (2) Therefore is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation) or of the prevention of sewage sludge use or disposal in compliance with the following statutory provisions and regulations or permits issued thereunder (or more stringent State or local regulations): Section 405 of the Clean Water Act, the Solid Waste Disposal Act (SWDA) (including Title II, more commonly referred to as the Resource Conservation and Recovery Act (RCRA), and including State regulations contained in any State sludge management plan prepared pursuant to Subtitle D of the SWDA), the Clean Air Act, the Toxic Substances Control Act, and the Marine Protection, Research and Sanctuaries Act.

PART II

Section A.2. (continued)

1. National Pretreatment Standards

National Pretreatment Standards are defined as the regulations promulgated by or to be promulgated by the Federal Environmental Protection Agency pursuant to Section 307(b) and (c) of the Act. The standards establish nationwide limits for specific industrial categories for discharge to Publicly Owned Treatment Works.

m. Pretreatment

Pretreatment is defined as reducing the amount of pollutants, eliminating pollutants, or altering the nature of pollutant properties to a less harmful state prior to discharge into a public sewer. The reduction or alteration can be by physical, chemical, or biological processes, process changes, or by other means. Dilution is not considered pretreatment unless expressly authorized by an applicable National Pretreatment Standard for a particular industrial category.

n. Water Quality Standards

The Water Quality Standards are defined as Part 4 of the General Rules of the Michigan Water Resources Commission promulgated by authority of Sections 2 and 5 of the Michigan Act.

3. Monitoring

a. The analytical test procedures used shall conform to the rules and regulations promulgated under Section 304(h) of the "Act" (Title 40, Chapter 1, Subchapter D., Part 136-Guidelines Establishing Test Procedures for the Analysis of Pollutants). Copies are available from the Surface Water Quality Division on request. For parameters not covered by the regulations, test procedures shall be submitted for approval to the Chief of the Permits Section of the Surface Water Quality Division.

b. The permittee shall periodically calibrate and perform maintenance procedures on all monitoring and analytical instrumentation at intervals to ensure accuracy of measurements.

c. Fecal Coliform Bacteria analyses, at facilities using chlorine for disinfection, shall be performed on "grab" samples collected at varying times during an operating day. Information derived therefrom shall be correlated with chlorine residual levels, flow rate, and loading variations for the purpose of minimizing chlorine use, while maintaining compliance with the effluent limitations.

4. Recording Results

For each measurement or sample taken pursuant to the requirements of this permit, the permittee shall record the following information:

- a. The exact place, date, and time of measurement or sampling;
- b. The person(s) who performed the measurement or sample collection;
- c. The dates the analyses were performed;
- d. The person(s) who performed the analyses;
- e. The analytical techniques or methods used;
- f. The date of and person responsible for equipment calibration; and
- g. The results of all required analyses.

PART II

Section A. (continued)

5. Additional Monitoring by Permittee

If the permittee monitors any pollutant more frequently than required by this permit, using approved analytical methods as specified above, the results shall be included in the calculation and reporting of the values required in the Discharge Monitoring Report.

6. Records Retention

All records and information resulting from the monitoring activities required by this permit, including all records of analyses performed and calibration and maintenance of instrumentation and recordings from continuous monitoring instrumentation, shall be retained for a minimum of three (3) years or longer if requested by the Surface Water Quality Division or the Regional Administrator.

B. PERMIT PROGRAM ADMINISTRATION

1. Michigan Water Resources Commission

The Michigan Water Resources Commission has been designated the authority to administer the NPDES permit program in the State of Michigan.

2. Regional Administrator

Where used within this permit, the term Regional Administrator shall mean the Administrator, U.S. Environmental Protection Agency-Region V, 230 South Dearborn Street, Chicago, Illinois, 60604.

3. N.P.D.E.S.

NPDES is defined as the National Pollutant Discharge Elimination System pursuant to Section 402 of the Federal Water Pollution Control Act as amended (33 U.S.C. 1251 et seq, P.L. 92-500, 95-217).

4. Surface Water Quality Division

The Surface Water Quality Division of the Michigan Department of Natural Resources provides the staff for the administration of the NPDES program by the Michigan Water Resources Commission. Reports, notifications, and questions regarding this permit or the NPDES program should be addressed to the Jackson District Supervisor of the Surface Water Quality Division.

PART II

C. MANAGEMENT REQUIREMENTS

1. Change in Discharge

All discharges authorized herein shall be consistent with the terms and conditions of this permit. The discharge of any pollutant identified in this permit more frequently than or at a level in excess of that authorized, shall constitute a violation of the permit. Any anticipated significant loading increase, facility expansions, or process modifications which will result in new, different, or increased discharges of pollutants must be reported by submission of a new NPDES application to the Chief of the Permits Section of the Surface Water Quality Division or, if such changes will not violate the effluent limitations specified in this permit, by notice to the Jackson District Supervisor of the Surface Water Quality Division of such changes. Following such notice, the permit may be modified to specify and limit any pollutants not previously limited.

2. Containment Facilities

The permittee shall provide facilities for containment of any accidental losses of concentrated solutions, acids, alkalies, salts, oils, or other polluting materials. These facilities shall be approved under Act 98, Public Acts of 1913, as amended, and in accordance with the requirements of the Michigan Water Resources Commission Rules, Part 5.

3. Operator Certification

The permittee shall have the waste treatment facilities under the direct supervision of an operator certified by the Michigan Department of Natural Resources as required by Regulations Governing the Certification of Sewage Treatment Works Operators in accordance with Act 98, Public Acts of 1913, as amended (R 299.2911-R 299.2927).

4. Noncompliance Notification

If, for any reason, the permittee does not comply with or will be unable to comply with any condition specified in this permit, the permittee shall provide the Jackson District Supervisor of the Surface Water Quality Division and the Regional Administrator with the following information, in writing, at the time of submittal of the monthly operating data:

- a. a description of the circumstances and cause of noncompliance; and
- b. the period of noncompliance, including exact dates and times; or, if not corrected, the anticipated time the noncompliance is expected to continue, and steps being taken to reduce, eliminate and prevent recurrence of the noncompliance.

5. Facilities Operation

All waste collection, control, treatment and disposal facilities shall be operated in a manner consistent with the following:

- a. At all times, all facilities shall be operated and maintained in an efficient and responsible manner.
- b. The permittee shall provide an adequate operating staff which is qualified to carry out the operation, maintenance and testing functions required to ensure compliance with this permit.

PART II

Section C.5. (continued)

c. Maintenance of treatment facilities shall not result in degradation of effluent quality.

d. Under no circumstances shall the permittee allow introduction of the following wastes into the waste treatment system:

- (1) Wastes which create or can create a fire or explosion hazard - defined as being greater than 20% of the lower explosive limit (LEL) for the substance;
- (2) Wastes which create or cause corrosive structural damage;
- (3) Wastes with a pH lower than 5.0 or greater than 11.0;
- (4) Solid or viscous substances in amounts which cause obstructions to the flow in collecting or intercepting sewers or interference with the proper operation of the treatment works;
- (5) Any pollutant, including oxygen demanding substances released in a discharge of such volume or strength which causes interference in the treatment works; or
- (6) Heat in such amounts that biological activity is inhibited at the treatment works resulting in interference. The discharge of heat must be regulated so that the temperature at the treatment works influent does not exceed 40°C (104°F).

6. Adverse Impact

The permittee shall take all reasonable steps to minimize any adverse impact to waters of the state resulting from noncompliance with this permit. Such steps may include accelerated or additional monitoring as necessary to determine the nature and impact of the noncompliance.

7. Waste Treatment Residues

Solids, sludges, ashes, filter backwash, scrubber water, or other pollutants resulting from the treatment or control of wastewaters shall be disposed in an environmentally compatible manner. Such disposal shall not result in any unlawful pollution of the air, surface waters or groundwaters of the state. Additional monitoring may be required to confirm the adequacy of disposal.

8. By-passing or Accidental Losses

Any diversion from or by-pass of facilities necessary to maintain compliance with the terms and conditions of this permit is prohibited, except (i) where unavoidable to prevent loss of life, severe property damage, extended duration process upset, or (ii) where excessive flow would damage any facilities necessary for compliance with the effluent limitations of this permit. The permittee shall promptly notify the Surface Water Quality Division of any such by-pass, or any accidental loss of pollution materials by telephone at 1-800-292-4706. Such notice shall be supplemented by a written report submitted within five (5) days to the Jackson District Supervisor of the Surface Water Quality Division, detailing the cause of such diversion, by-pass, or loss, and the corrective actions taken to minimize adverse impacts and eliminate the cause for future diversion, by-pass or loss.

PART II

Section C. (continued)

9. Power Failures

In order to maintain compliance with the effluent limitations and prevent unauthorized discharges, the permittee shall:

- a. Provide alternative power or equipment sufficient to operate essential facilities utilized by the permittee to comply with this permit in accordance with Design Criteria for Mechanical, Electric, and Fluid System and Component Reliability published by the Federal Environmental Protection Agency (EPA - 430-99-74-001), or
- b. Upon the reduction, loss, or failure of one or more of the primary sources of power to facilities utilized by the permittee to maintain compliance with this permit, the permittee shall halt, reduce or otherwise control all discharges in order to maintain compliance with the effluent limitations and conditions of this permit.

D. RESPONSIBILITIES

1. Right of Entry

The permittee shall allow the Michigan Water Resources Commission, the Regional Administrator and/or their authorized representatives, upon presentation of credentials:

- a. to enter upon the permittee's premises where an effluent source is located or in which any records are required to be kept under the terms and conditions of this permit; and
- b. at reasonable times to have access to and copy any records required to be kept under the terms and conditions of this permit, to inspect any monitoring equipment or monitoring method required in this permit and to sample any discharge of pollutants.

2. Transfer of Ownership or Control

In the event of any change in ownership or control of facilities from which the authorized discharge emanates, the permittee shall notify the succeeding owner or controller of the existence of this permit by letter. A copy of this letter shall be forwarded to the Jackson District Supervisor of the Surface Water Quality Division and the Regional Administrator 30 days prior to the actual transfer of ownership or control.

3. Availability of Reports

All reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of the Surface Water Quality Division and the Regional Administrator. As required by the Act, effluent data shall not be considered confidential. Knowingly making any false statement on any such report may result in the imposition of criminal penalties as provided for in Section 309 of the Act, Sections 7 and 10 of the Michigan Act, and Sections 8 and 13 of Act 98, Public Acts of 1913, as amended.

PART II

Section D. (continued)

4. Permit Modification

After notice and opportunity for a hearing, this permit may be modified, suspended, or revoked in whole or in part during its term for cause including, but not limited to, the following:

- a. violation of any terms or conditions of this permit;
- b. obtaining this permit by misrepresentation or failure to disclose fully all relevant facts;
- c. a change in any condition that requires either a temporary or permanent reduction or elimination of the authorized discharge; or
- d. the establishment of a toxic effluent standard or prohibition under Section 307(a) of the Act more stringent than any limitation in this permit.

5. Civil and Criminal Liability

Except as provided in permit conditions on "By-passing" (Part II.C.8.), nothing in this permit shall be construed to relieve the permittee from civil or criminal penalties for noncompliance.

6. Property Rights

The issuance of this permit does not convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor infringement of Federal, State or local laws or regulations.

7. Facility Construction

This permit does not authorize or approve the construction or modification of any physical structures or facilities. Approval for such construction must be by permit issued under Act 98, Public Acts of 1913, as amended.

8. Severability

The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstances, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

K2

BRONSON PLATING NPDES PERMIT

PERMIT NO. MI0000825

MICHIGAN WATER RESOURCES COMMISSION
AUTHORIZATION TO DISCHARGE UNDER THE
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of the Federal Water Pollution Control Act, as amended, (33 U.S.C. 1251 et seq; the "Act"), and the Michigan Water Resources Commission Act, as amended, (Act 245, Public Acts of 1929, as amended, the "Michigan Act"),

Bronson Plating Company
P.O. Box 69
Bronson, Michigan 49028

is authorized to discharge from a facility located at

135 Industrial Avenue
Bronson, Michigan 49028

designated as Bronson Plating Co

to the receiving water named Swan Creek via County Drain 30 in accordance with effluent limitations, monitoring requirements and other conditions set forth in this permit.

This permit takes effect on October 1, 1990. Any person who feels aggrieved by this permit may file a sworn petition with the Executive Secretary of the Michigan Water Resources Commission, setting forth the conditions of the permit which are being challenged and specifying the grounds for the challenge. The Commission may reject any petition filed more than 60 days after issuance as being untimely. Upon granting of a contested case to the applicant, the Commission shall review the permit to determine which contested term shall be stayed until the Commission takes its final action. If a contested condition is a requirement placed on wastewater covered by a new or increased discharge authorization, such increased discharge authorization shall be stayed until the Commission takes final action. All other conditions of the permit remain in full effect. If the contested condition is a modification of a previous permit condition and the Commission determines the contested condition shall be stayed, then such previous condition remains in effect until the Commission takes final action. During the course of any administrative proceeding brought by a person other than the applicant, the conditions of this permit will remain in effect, unless the Commission determines otherwise.

This permit and the authorization to discharge shall expire at midnight October 1, 1995. In order to receive authorization to discharge beyond the date of expiration, the permittee shall submit such information and forms as are required by the Michigan Water Resources Commission to the Permits Section of the Surface Water Quality Division no later than 180 days prior to the date of expiration.

This permit is based on an application submitted on October 18, 1989, as amended. On December 1, 1990, this permit shall supersede NPDES Permit No. MI0000825, expiring December 31, 1989.

Issued this 20th day of September, 1990, by the Michigan Water Resources Commission.



Paul D. Zegger
Executive Secretary

PART I

Section A.

1. Interim Effluent Limitations, Outfall 001

During the period beginning on October 1, 1990, and lasting until September 30, 1993, the permittee is authorized to discharge an average of two hundred fifty thousand (250,000) gallons per day of treated process wastewater boiler blowdown, noncontact cooling water (up to a maximum of 10,000 gpd) and excess well water (up to a maximum of 100,000 gpd) and an unspecified amount stormwater runoff from outfall 001 to Swan Creek via County Drain 30. Such discharge shall be limited and monitored by the permittee as specified below.

Effluent Characteristic	Discharge Limitations				Monitoring Requirements	
	lbs/day		Other Limitations		Measurement Frequency	Sample Type
	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum		
Flow (MGD)	(report)	(report)			Daily	Report Total Daily Flow
Total Suspended Solids	52	73	25 mg/l	35 mg/l	2X Weekly	24-Hr Composite
Total Nickel	0.57	3.2	272 ug/l	1530 ug/l	Daily	24-Hr Composite
Total Copper	0.16	0.24	78 ug/l	116 ug/l	Daily	24-Hr Composite
Total Chromium	0.69	1.6	330 ug/l	780 ug/l	Daily	24-Hr Composite
Hexavalent Chromium	0.021	0.063	10 ug/l	30 ug/l	Daily	24-Hr Composite
CBOD ₅ (mg/l) (monitoring required beginning October 1, 1991)			(report)	(report)	Weekly	24-Hr Composite
Ammonia-Nitrogen (mg/l) (monitoring required beginning October 1, 1991)			(report)	(report)	Weekly	24-Hr Composite
Chronic Toxicity (TU) (see Part I.A.1.e.)				(report)	Quarterly	24-Hr Composite
Total Toxic Organics (TTO)*				2.13 mg/l**	***	***
Total Phosphorus (mg/l) (monitoring required beginning October 1, 1992)			(report)	(report)	Weekly	24-Hr Composite
pH (Standard Units) (see Part I.A.1.a.)			Daily Minimum	Daily Maximum	Continuous	Report Daily Max. and Min.
			6.0	9.0		
Dissolved Oxygen (mg/l) (monitoring required beginning October 1, 1992)			(report)		Weekly	Grab

(continued)

PART I

- Section A.1. (continued)

*See Part I.A.5. for definition of TTO.

**This is a guideline based limitation and is not an authorization to discharge toxic organic compounds at levels which cause or may cause water quality violations. The discharge of toxic organic compounds at levels which cause or may cause water quality violations is prohibited.

***As an approved alternative to monitoring TTO, the permittee shall carry out the requirements of the Toxic Organic Pollutant Management Plan and certification statement as specified below.

Alternative to TTO Monitoring: The permittee has previously submitted and received approval of a Toxic Organic Pollutant Management Plan. The plan specifies the toxic organic chemicals used and sludges or process residuals generated; the method of disposal used, such as reclamation, contract hauling, or incineration; and procedures for ensuring that toxic organic pollutants do not spill or routinely leak into process wastewater, noncontact cooling water, groundwater, stormwater, or other surface waters.

Any change in the Toxic Organic Pollutant Management Plan shall be approved by the Jackson District Supervisor of the Surface Water Quality Division prior to its implementation by the permittee.

The permittee shall submit the following certification on the Discharge Monitoring Reports:

"Based on my inquiry of the person or persons directly responsible for managing compliance with the permit limitation for Total Toxic Organics, I certify that, to the best of my knowledge and belief, no dumping of concentrated toxic organics into the wastewaters has occurred since the period covered by the last monthly monitoring report. I further certify that this facility has implemented the approved Toxic Organic Pollutant Management Plan since the period covered by the last Discharge Monitoring Report."

a. The pH shall be within the range 6.0 to 9.0 standard units, inclusive, at least 99 percent of the time during any calendar month and within the range 5.5 to 10.5 standard units, inclusive, 100 percent of the time. The pH shall not be less than 6.0 nor greater than 9.0 continuously for more than one hour. The total time outside the 6.0 to 9.0 range shall be reported each month (1 percent of the calendar month is equal to 7 hours and 26 minutes).

b. The receiving water shall contain no unnatural turbidity, color, oil film, floating solids, foams, settleable solids, or deposits as a result of this discharge.

c. Samples, measurements, and observations taken in compliance with the monitoring requirements above shall be taken of the treated wastewater prior to mixing with the noncontact cooling water and excess well water (except for pH which may be monitored after mixing with the noncontact cooling water and excess well water). All samples shall be collected prior to discharge to County Drain 30. No monitoring is required when the discharge consist only of excess well water and/or noncontact cooling water.

PART I

Section A.1. (continued)

d. In the event the permittee shall require the discharge of water treatment additives in addition to any previously approved by the Jackson District Supervisor of the Surface Water Quality Division, the permittee shall notify the Jackson District Supervisor at least 20 working days prior to such use, in accordance with the requirements of Part II.A.2. An additive shall not be used if the permittee is notified by the Jackson District Supervisor that its use is not acceptable, and the reasons for that determination. The permit may be modified in accordance with the requirements of Part II.B.4. if a constituent of the additive or additives requires limiting.

For the purposes of this provision, the term "water treatment additive" shall mean materials added to the intake water supply and shall not include chemicals, materials or substances used to effect wastewater treatment or used in the electroplating process itself.

e. TU_C means chronic toxic unit. The term "chronic toxic unit" is defined as the reciprocal of the effluent's maximum acceptable toxicant concentration (MATC) expressed with 100 as the numerator and the MATC as a percentage in the denominator. Maximum acceptable toxicant concentration is defined in Rule 43(q) of the Part 4 Rules of the Michigan Water Resources Commission.

The permittee shall conduct chronic toxicity tests on the discharge from outfall 001 according to the procedures outlined in the approved biomonitoring plan as specified in Part I.A.3. of this permit.

f. Quarterly samples for chronic toxicity testing shall be collected during the months of January, April, July and October. The results of such testing shall be reported on the Discharge Monitoring Reports for the month following the test.

PART I

Section A.

2. Final Effluent Limitations, Outfall 001

During the period beginning on October 1, 1993, and lasting until the expiration date of this permit, the permittee is authorized to discharge an average of two hundred fifty thousand (250,000) gallons per day of treated process wastewater boiler blowdown, noncontact cooling water (up to a maximum of 10,000 gpd) and excess well water (up to a maximum of 100,000 gpd) and an unspecified amount stormwater runoff from outfall 001 to Swan Creek via County Drain 30. Such discharge shall be limited and monitored by the permittee as specified below.

Effluent Characteristic	Discharge Limitations				Monitoring Requirements	
	lbs/day		Other Limitations		Measurement Frequency	Sample Type
	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum		
Flow (MGD)	(report)	(report)			Daily	Report Total Daily Flow
Total Suspended Solids	52	73	25 mg/l	35 mg/l	2X Weekly	24-Hr Composite
Total Nickel	0.57	3.2	272 ug/l	1530 ug/l	Daily	24-Hr Composite
Total Copper	0.16	0.24	78 ug/l	116 ug/l	Daily	24-Hr Composite
Total Chromium	0.69	1.6	330 ug/l	780 ug/l	Daily	24-Hr Composite
Hexavalent Chromium	0.021	0.063	10 ug/l	30 ug/l	Daily	24-Hr Composite
CBOD ₅						
May 1-Sept. 30	8.3	21	4 mg/l	10 mg/l	3X Weekly	24-Hr Composite
Oct. 1-Nov. 30		21		10 mg/l	3X Weekly	24-Hr Composite
Dec. 1-Apr. 30		83		40 mg/l	Weekly	24-Hr Composite
Ammonia-Nitrogen						
May 1-Sept. 30	1.0	4.2	0.5 mg/l	2.0 mg/l	3X Weekly	24-Hr Composite
Oct. 1-Nov. 30		4.2		2.0 mg/l	3X Weekly	24-Hr Composite
Dec. 1-Apr. 30		42		20 mg/l	Weekly	24-Hr Composite
Chronic Toxicity (see Part I.A.2.f.)				1.7 TU _C	Quarterly	24-Hr Composite
Total Toxic Organics (TTO)*				2.13 mg/l**	***	***
Total Phosphorus (mg/l) (also report total pounds discharged during the month)			(report)	(report)	Daily	24-Hr Composite

Total Phosphorus lbs/12 months
245 Monthly Calculation
(see Part I.A.2.g.)

This limit takes effect beginning October 1, 1994.

(continued)

PART -I

Section A.2. (continued)

Effluent Characteristic	Discharge Limitations				Monitoring Requirements	
	lbs/day		Other Limitations		Measurement	Sample
	Monthly Average	Daily Maximum	Daily Minimum	Daily Maximum	Frequency	Type
pH (Standard Units) (see Part I.A.2.a.)			6.0	9.0	Continuous	Report Daily Max. and Min.
Dissolved Oxygen			3.0 mg/l		3X Weekly	Grab

*See Part I.A.5. for definition of TTO.

**This is a guideline based limitation and is not an authorization to discharge toxic organic compounds at levels which cause or may cause water quality violations. The discharge of toxic organic compounds at levels which cause or may cause water quality violations is prohibited.

***As an approved alternative to monitoring TTO, the permittee shall carry out the requirements of the Toxic Organic Pollutant Management Plan and certification statement as specified below.

Alternative to TTO Monitoring: The permittee has previously submitted and received approval of a Toxic Organic Pollutant Management Plan. The plan specifies the toxic organic chemicals used and sludges or process residuals generated; the method of disposal used, such as reclamation, contract hauling, or incineration; and procedures for ensuring that toxic organic pollutants do not spill or routinely leak into process wastewater, noncontact cooling water, groundwater, stormwater, or other surface waters.

Any change in the Toxic Organic Pollutant Management Plan shall be approved by the Jackson District Supervisor of the Surface Water Quality Division prior to its implementation by the permittee.

The permittee shall submit the following certification on the Discharge Monitoring Reports:

"Based on my inquiry of the person or persons directly responsible for managing compliance with the permit limitation for Total Toxic Organics, I certify that, to the best of my knowledge and belief, no dumping of concentrated toxic organics into the wastewaters has occurred since the period covered by the last monthly monitoring report. I further certify that this facility has implemented the approved Toxic Organic Pollutant Management Plan since the period covered by the last Discharge Monitoring Report."

a. The pH shall be within the range 6.0 to 9.0 standard units, inclusive, at least 99 percent of the time during any calendar month and within the range 5.5 to 10.5 standard units, inclusive, 100 percent of the time. The pH shall not be less than 6.0 nor greater than 9.0 continuously for more than one hour. The total time outside the 6.0 to 9.0 range shall be reported each month (1 percent of the calendar month is equal to 7 hours and 26 minutes).

(continued)

PART I

Section A.2. (continued)

b. The receiving water shall contain no unnatural turbidity, color, oil film, floating solids, foams, settleable solids, or deposits as a result of this discharge.

c. Samples, measurements, and observations taken in compliance with the monitoring requirements above shall be taken of the treated wastewater prior to mixing with the noncontact cooling water and excess well water (except for pH which may be monitored after mixing with the noncontact cooling water and excess well water). All samples shall be collected prior to discharge to County Drain 30. No monitoring is required when the discharge consist only of excess well water and/or noncontact cooling water.

d. In the event the permittee shall require the discharge of water treatment additives in addition to any previously approved by the Jackson District Supervisor of the Surface Water Quality Division, the permittee shall notify the Jackson District Supervisor at least 20 working days prior to such use, in accordance with the requirements of Part II.A.2. An additive shall not be used if the permittee is notified by the Jackson District Supervisor that its use is not acceptable, and the reasons for that determination. The permit may be modified in accordance with the requirements of Part II.B.4. if a constituent of the additive or additives requires limiting.

For the purposes of this provision, the term "water treatment additive" shall mean materials added to the intake water supply and shall not include chemicals, materials or substances used to effect wastewater treatment or used in the electroplating process itself.

e. Prior to October 1, 1993, the permittee may request modification of the final effluent limitations contained in this permit for cause as defined at 40 CFR 122.62 and demonstrate either that higher limits are acceptable or that limitations and/or monitoring are not needed. To be successful such demonstration must be based on information not previously submitted to the Commission and therefore would constitute new information pursuant to 40 CFR 122.62(a)(2) and Section 402(o)(2)(B)(i) of the Act. If the demonstration is successful, the permit may then be modified after public notice and Commission approval of the recommended permit modification in accordance with Part II.B.4.

f. TU_C means chronic toxic unit. The term "chronic toxic unit" is defined as the reciprocal of the effluent's maximum acceptable toxicant concentration (MATC) expressed with 100 as the numerator and the MATC as a percentage in the denominator. Maximum acceptable toxicant concentration is defined in Rule 43(q) of the Part 4 Rules of the Michigan Water Resources Commission.

The permittee shall conduct chronic toxicity tests on the discharge from outfall 001 according to the procedures outlined in the approved biomonitoring plan as specified in Part I.A.3. of this permit.

(1) Where any one monitoring event shows an exceedance of the 1.7 TU_C limit for effluent toxicity, the permittee shall increase the frequency of toxicity testing to monthly for a period of two months. The results of these tests shall be submitted to the Jackson District Supervisor of the Surface Water Quality Division within 14 days of the completion of the final test. The Chief of the Surface Water Quality Division will determine whether the permittee must implement the toxicity control program requirements specified in (2) below; or if the permittee may return to the quarterly frequency for measuring the chronic toxicity in the outfall 001 effluent.

(continued)

PART I

Section A.2.f. (continued)

(2) Upon written notification by the Chief of the Surface Water Quality Division, the following conditions apply:

(i) Within 90 days of the above notification, the permittee shall submit a toxicity identification/reduction evaluation (TI/RE) plan to the Jackson District Supervisor. The TI/RE plan shall include appropriate measures to comply with the final chronic toxicity limit of 1.7 TU_C, monitoring to show the effectiveness of the toxicity control measures, and a schedule to implement the plan.

(ii) The permittee shall implement the TI/RE plan in accordance with the schedule contained in the plan.

g. The total phosphorus limitation is 245 lbs/12 months. The total load discharged during the last 12 months shall be determined as follows. The load discharged for each day of the reporting month shall be determined. The total load discharged during the reporting month shall then be determined by summing the daily loads. The load discharged during the current reporting month shall be added to the loads discharged during the previous eleven months. This value shall be reported.

h. Quarterly samples for chronic toxicity testing shall be collected during the months of January, April, July and October. The results of such testing shall be reported on the Discharge Monitoring Reports for the month following the test.

3. Special Condition - Chronic Toxicity Biomonitoring Plan

a. On or before December 1, 1990, the permittee shall submit a biomonitoring plan outlining specific chronic toxicity testing and reporting procedures to the Jackson District Supervisor of the Surface Water Quality Division for approval. The chronic toxicity tests shall be conducted as specified in Parts I.A.1. and I.A.2. after approval of the biomonitoring plan. Test species shall include fathead minnow and either Daphnia or Ceriodaphnia (alternate test species may be used upon approval of the Jackson District Supervisor of the Surface Water Quality Division). After one year, subsequent testing may be reduced, upon approval of the Jackson District Supervisor, to the most sensitive species, if one can be clearly identified. Testing and reporting procedures shall follow procedures contained in EPA/600/4-89/001, "Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms", for fathead minnow and Ceriodaphnia; and ASTM E 1193-87, "Standard Guide for Conducting Renewal Life-Cycle Toxicity Tests with Daphnia magna", for Daphnia (alternate methods may be used upon approval of the Jackson District Supervisor).

4. Special Condition - Toxicity Identification/Reduction Evaluation

a. On or before December 1, 1991, the permittee shall submit a Toxicity Identification/Reduction Evaluation (TI/RE) plan to the Jackson District Supervisor of the Surface Water Quality Division. The TI/RE plan shall include appropriate measures to reduce effluent toxicity to a level which complies with the final whole effluent limit specified in Part I.A.2., monitoring to show the effectiveness of the toxicity control measures, and a schedule to implement the plan. The completion date for the TI/RE shall not extend beyond October 1, 1993.

b. The permittee shall implement the TI/RE plan in accordance with the schedule contained in the plan.

PART I

Section A.

5. Total Toxic Organics (definition) - The term "TTO" shall mean total toxic organics which is the summation of all quantifiable values greater than 0.01 milligrams per liter for the following toxic organics:

Acenaphthene	Hexachlorobutadiene
Acrolein	Hexachlorocyclopentadiene
Acrylonitrile	Isophorone
Benzene	Naphthalene
Benzidine	Nitrobenzene
Carbon tetrachloride (tetrachloromethane)	2-nitrophenol
Chlorobenzene	4-nitrophenol
1,2,4-trichlorobenzene	2,4-dinitrophenol
Hexachlorobenzene	4,6-dinitro-o-cresol
1,2-dichloroethane	N-nitrosodimethylamine
1,1,1-trichloroethane	N-nitrosodiphenylamine
Hexachloroethane	N-nitrosodi-n-propylamine
1,1-dichloroethane	Pentachlorophenol
1,1,2-trichloroethane	Phenol
1,1,2,2-tetrachloroethane	Bis (2-ethylhexyl) phthalate
Chloroethane	Butyl benzyl phthalate
Bis (2-chloroethyl) ether	Di-n-butyl phthalate
2-chloroethyl vinyl ether (mixed)	Di-n-octyl phthalate
2-chloronaphthalene	Diethyl phthalate
2,4,6-trichlorophenol	Dimethyl phthalate
Parachlorometa cresol	1,2-benzanthracene (benzo(a)anthracene)
Chloroform (trichloromethane)	Benzo(a)pyrene (3,4-benzopyrene)
2-chlorophenol	3,4-Benzofluoranthene (benzo(b)fluoranthene)
1,2-dichlorobenzene	11,12-benzofluoranthene
1,3-dichlorobenzene	(benzo(k)fluoranthene)
1,4-dichlorobenzene	Chrysene
3,3-dichlorobenzindine	Acenaphthylene
1,1-dichloroethylene	Anthracene
1,2-trans-dichloroethylene	1,12-benzoperylene (benzo(ghi)perylene)
2,4-dichlorophenol	Fluorene
1,2-dichloropropane (1,3-dichloropropene)	Phenanthrene
2,4-dimethylphenol	1,2,5,6-dibenzanthracene
2,4-dinitrotoluene	(dibenzo(a,h)anthracene)
2,6-dinitrotoluene	Indeno(1,2,3-cd)pyrene
1,2-diphenylhydrazine	(2,3-o-phenylene pyrene)
Ethylbenzene	Pyrene
Fluoranthene	Tetrachloroethylene
4-chlorophenyl phenyl ether	Toluene
4-bromophenyl phenyl ether	Trichloroethylene
Bis (2-chloroisopropyl) ether	Vinyl chloride (chloroethylene)
Bis (2-chloroethoxy) methane	Aldrin
Methylene chloride (dichloromethane)	Dieldrin
Methyl chloride (chloromethane)	Chlordane (technical mixture and
Methyl bromide (bromomethane)	metabolites)
Bromoform (tribromomethane)	4,4-DDT
Dichlorobromomethane	4,4-DDE (p,p-DDX)
Chlorodibromomethane	4,4-DDD (p,p-TDE)

(continued)

PART I

Section A.5. (continued)

Alpha-endosulfan	(PCB-polychlorinated biphenyls)
Beta-endosulfan	PCB-1242 (Arochlor 1242)
Endosulfan sulfate	PCB-1254 (Arochlor 1254)
Endrin	PCB-1221 (Arochlor 1221)
Endrin aldehyde	PCB-1232 (Arochlor 1232)
Heptachlor	PCB-1248 (Arochlor 1248)
Heptachlor epoxide	PCB-1260 (Arochlor 1260)
(BHC-hexachlorocyclohexane)	PCB-1016 (Arochlor 1016)
Alpha-BHC	Toxaphene
Beta-BHC	2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD)
Gamma-BHC	
Delta-BHC	

6. Special Condition - Short Term Waste Characterization Study

As a condition of this permit, the permittee shall monitor the discharge from outfall 001 for the constituents, at the frequency, and for the duration specified below. This monitoring is designed to determine whether these constituents are discharged in significant quantities. The results of the analysis of such monitoring shall be submitted to the Jackson District Supervisor of the Surface Water Quality Division on or before April 30, 1991. If, upon review of the analysis, it is determined that any of the materials or constituents require limiting to protect the receiving waters in accordance with applicable water quality standards, the permit may then be modified after public notice and Commission approval of the recommended permit modification in accordance with Part II.B.4.

<u>CONSTITUENT</u>	<u>SAMPLE TYPE</u>	<u>SAMPLE FREQUENCY</u>	<u>SAMPLE DURATION</u>
Chloromethane	Grab	Weekly	Six Weeks
Total Cadmium	24-Hr Composite	Weekly	Six Weeks

Chloromethane shall be analyzed using EPA Method 601. Total Cadmium shall be analyzed using an EPA approved method with a desired detection level of 0.2 ug/l unless a higher detection level is appropriate because of sample matrix interference.

7. Discharge to the Groundwaters

The reissuance of this permit does not authorize any discharge to the groundwaters or venting of contaminated groundwaters to the surface waters, nor does it constitute a release of liability for any groundwater contamination at or around the site. The State reserves its rights to seek remedies to abate any groundwater contamination.

PART-I

Section A.

8. Special Condition - Well Water Monitoring

As a condition of this permit, the permittee shall monitor the well water for the constituents and at the frequency specified below. The first sample shall be collected during October, 1990. This monitoring is required for the life of the permit. This monitoring is designed to determine whether these constituents are discharged in significant quantities. The results of the analysis of such monitoring shall be reported on Discharge Monitoring Reports. If, upon review of the analysis, it is determined that any of the materials or constituents require limiting to protect the receiving waters in accordance with applicable water quality standards, the permit may then be modified after public notice and Commission approval of the recommended permit modification in accordance with Part II.B.4.

<u>CONSTITUENT</u>	<u>SAMPLE TYPE</u>	<u>SAMPLE FREQUENCY</u>	<u>ANALYTICAL DETECTION LEVEL</u>
Total Nickel	24-Hr Composite	Quarterly	50 ug/l
Total Copper	24-Hr Composite	Quarterly	20 ug/l
Total Chromium	24-Hr Composite	Quarterly	50 ug/l

Quarterly samples shall be collected during the months of January, April, July and October.

9. Special Condition - Notification Requirement

The permittee shall notify the Jackson District Supervisor of the Surface Water Quality Division, in writing, within 10 days of knowing, or having reason to believe, that any activity or change has occurred or will occur which would result in the discharge of:

- a. Detectable levels* of chemicals on the current Michigan Critical Materials Register or priority pollutants or hazardous substances set forth in 40 CFR 122.21, Appendix D, which were not acknowledged in the application** or listed in the application at less than detectable levels.
- b. Detectable levels* of any other chemical not listed in the application or listed at less than detection, for which the application specifically requested information.
- c. Any chemical at levels greater than five times the average level reported in the application**.

Any other monitoring results obtained as a requirement of this permit shall be reported in accordance with the schedule of compliance.

*The detectable level shall be defined as the Method Detection Limit (MDL) as given in Appendix B to Part 136, Federal Register, Vol. 49, No. 209, October 26, 1984, pp. 43430-31.

**The application submitted on October 18, 1989, as amended.

PART I

B. MONITORING AND REPORTING

1. Representative Sampling

Samples and measurements taken as required herein shall be representative of the volume and nature of the monitored discharge.

2. Reporting:

a. DMR Submittal Requirements - The permittee shall submit Discharge Monitoring Report (DMR) forms to the Michigan Department of Natural Resources, Surface Water Quality Division, Data Entry Unit, P.O. Box 30028, Lansing, Michigan, 48909, for each calendar month of the authorized discharge period(s). The DMRs shall be postmarked no later than the 10th day of the month following each month of the authorized discharge period(s).

3. Definitions

a. The monthly average discharge is defined as the total discharge by weight, or concentration if specified, during the reporting month divided by the number of days in the reporting month that the discharge from the production or commercial facility occurred. If the pollutant concentration in any sample is less than the detection limit, regard that value as zero when calculating monthly average concentration. When less than daily sampling occurs, the monthly average discharge shall be determined by the summation of the measured daily discharges by weight, or concentration if specified, divided by the number of days during the reporting month when the samples were collected, analyzed and reported.

b. The daily maximum discharge means the total discharge by weight, or concentration if specified, during any calendar day.

c. The Regional Administrator is defined as the Region V Administrator, U.S. EPA, located at 230 South Dearborn, 13th Floor, Chicago, Illinois, 60604.

d. The Executive Secretary of the Michigan Water Resources Commission is located in the KNAPP'S OFFICE CENTRE. The mailing address is P.O. Box 30028, Lansing, Michigan, 48909.

e. The Chief of the Surface Water Quality Division's mailing address is P.O. Box 30028, Lansing, Michigan, 48909.

4. Test Procedures

Test procedures for the analysis of pollutants shall conform to regulations published pursuant to Section 304(h) of the Act, under which such procedures may be required.

PART I

Section B.

5. Recording Results

For each measurement or sample taken pursuant to the requirements of this permit, the permittee shall record the following information:

- a. The exact place, date, and time of measurement or sampling;
- b. The person(s) who performed the measurement or sample collection;
- c. The dates the analyses were performed;
- d. The person(s) who performed the analyses;
- e. The analytical techniques or methods used;
- f. The date of and person responsible for equipment calibration; and
- g. The results of all required analyses.

6. Additional Monitoring by Permittee

If the permittee monitors any pollutant at the location(s) designated herein more frequently than required by this permit, using approved analytical methods as specified above, the results of such monitoring shall be included in the calculation and reporting of the values required in the Discharge Monitoring Report. Such increased frequency shall also be indicated.

7. Records Retention

All records and information resulting from the monitoring activities required by this permit including all records of analyses performed and calibration and maintenance of instrumentation and recordings from continuous monitoring instrumentation shall be retained for a minimum of three (3) years, or longer if requested by the Regional Administrator or the Michigan Water Resources Commission.

PART I

C. SCHEDULE OF COMPLIANCE

1. The permittee shall achieve compliance with the final effluent limitations for outfall 001 specified in Part I.A.2., in accordance with the following schedule. All submittals shall be to the Jackson District Supervisor of the Surface Water Quality Division.

- a. On or before July 1, 1991, January 1, 1992, and July 1, 1992, the permittee shall submit a status report detailing the progress made to date toward compliance with the final limits for outfall 001.
- b. On or before September 1, 1992, the permittee shall submit an approvable preliminary engineering report and basis of design for said facilities.
- c. On or before December 1, 1992, the permittee shall submit approvable final plans and specifications for said facilities.
- d. On or before March 1, 1993, the permittee shall commence construction of said facilities.
- e. On or before September 1, 1993, the permittee shall complete construction of said facilities.
- f. On or before October 1, 1993, the permittee shall attain an operational level necessary to meet the limits specified herein.

2. Reapplication

If the discharges authorized by this permit are expected to continue beyond the expiration date of this permit, the permittee is required to submit an application for reissuance to the Chief of the Permits Section of the Surface Water Quality Division on or before April 1, 1995.

3. Written Notification Required

Within 14 days of every requirement date specified in this permit, the permittee shall submit a written notification to the Jackson District Supervisor of the Surface Water Quality Division indicating whether or not the particular requirement was accomplished. If the requirement was not accomplished, the notification shall include an explanation of the failure to accomplish the requirement, actions taken or planned by the permittee to correct the situation, and an estimate of when the requirement will be accomplished. If a written report is required to be submitted by a specified date and the permittee accomplishes this, a separate written notification is not required.

PART II

A. MANAGEMENT REQUIREMENTS

1. Duty to Comply

All discharges authorized herein shall be consistent with the terms and conditions of this permit. The discharge of any pollutant identified in this permit more frequently than or at a level in excess of that authorized shall constitute a violation of the permit.

It is the duty of the permittee to comply with all the terms and conditions of this permit. Any noncompliance with the Effluent Limitations, Special Conditions, or terms of this permit constitutes a violation of Public Acts 245, of 1929, as amended, and/or PL 92-500, as amended, and constitutes grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or denial of an application for permit renewal.

2. Change of Conditions

Any anticipated facility expansion, production increases, or process modification which will result in new, different, or increased discharges of pollutants must be reported by submission of a new application to the Chief of the Permits Section of the Surface Water Quality Division or, if such changes will not violate the effluent limitations specified in this permit, by notice to the Jackson District Supervisor of the Surface Water Quality Division. Following such notice, the permit may be modified to specify and limit any pollutant not previously limited.

3. Containment Facilities

The permittee shall provide facilities for containment of any accidental losses of concentrated solutions, acids, alkalies, salts, oils, or other polluting materials in accordance with the requirements of the Michigan Water Resources Commission Rules, Part 5. This requirement is included pursuant to Section 5 of the Michigan Water Resources Commission Act 245, P.A. of 1929, as amended, and the Part 5 Rules of the General Rules of the Commission.

4. Operator Certification

The permittee shall have the waste treatment facilities under direct supervision of an operator certified by the Michigan Department of Natural Resources, as required by Section 6a of the Michigan Act.

5. Noncompliance Notification

If, for any reason, the permittee does not comply with or will be unable to comply with any daily maximum effluent limitation specified in this permit, the permittee shall provide the Jackson District Supervisor of the Surface Water Quality Division with the following information, in writing, within five (5) days of becoming aware of such condition:

- a. A description of the discharge and cause of noncompliance; and
- b. The period of noncompliance, including exact dates and times; or, if not corrected, the anticipated time the noncompliance is expected to continue, and the steps taken to reduce, eliminate and prevent recurrence of the noncomplying discharge.

PART II

Section A.

6. Spill Notification

The permittee shall immediately report any spill or loss of any product, by-product, intermediate product, oils, solvents, waste material, or any other polluting substance which occurs to the surface waters or groundwaters of the state by calling the Department of Natural Resources 24-hour Emergency Response telephone number, 1-800-292-4706 (calls from out-of-state dial 1-517-373-8166); and within ten (10) days of the spill or loss, the permittee shall submit to the Jackson District Supervisor of the Surface Water Quality Division a full written explanation as to the cause and discovery of the spill or loss, clean-up and recovery measures taken, preventative measures to be taken, and schedule of implementation. This requirement is included pursuant to Section 5 of the Michigan Water Resources Commission Act 245, P.A. of 1929, as amended.

7. Facility Operation

The permittee shall at all times properly operate and maintain all treatment or control facilities or systems installed or used by the permittee to achieve compliance with the terms and conditions of this permit.

8. Adverse Impact

The permittee shall take all reasonable steps to minimize any adverse impact to the surface or groundwaters of the state resulting from noncompliance with any effluent limitation specified in this permit including, but not limited to, such accelerated or additional monitoring as necessary to determine the nature and impact of the discharge in noncompliance.

9. By-Passing

Any diversion from or by-pass of facilities necessary to maintain compliance with the terms and conditions of this permit is prohibited, except (a) where unavoidable to prevent loss of life, personal injury, or severe property damage, or (b) where excessive storm drainage or runoff would damage any facilities necessary for compliance with the effluent limitations and prohibitions of this permit. The permittee shall promptly notify the Jackson District Supervisor of the Surface Water Quality Division and the Regional Administrator, in writing, of such diversion or by-pass.

10. Power Failures

In order to maintain compliance with the effluent limitations and prohibitions of this permit, the permittee shall either:

- a. Provide an alternative power source sufficient to operate facilities utilized by the permittee to maintain compliance with the effluent limitations and conditions of this permit which provision shall be indicated in this permit by inclusion of a specific compliance date in each appropriate "Schedule of Compliance for Effluent Limitations".
- b. Upon the reduction, loss, or failure of one or more of the primary sources of power to facilities utilized by the permittee to maintain compliance with the effluent limitations and conditions of this permit, the permittee shall halt, reduce or otherwise control production and/or all discharge in order to maintain compliance with the effluent limitations and conditions of this permit.

PART II

Section A.

11. Removed Substances

Solids, sludges, filter backwash, or other pollutants removed from or resulting from treatment or control of wastewaters shall be disposed of in a manner such as to prevent any pollutant from such materials from entering navigable waters, or the entry of toxic or harmful contaminants thereof onto the groundwaters in concentrations or amounts detrimental to the groundwater resource.

12. Upset Noncompliance Notification

If a process "upset" (defined as an exceptional incident in which there is unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond the reasonable control of the permittee) has occurred, the permittee who wishes to establish the affirmative defense of upset shall notify the Jackson District Supervisor of the Surface Water Quality Division by telephone within 24 hours of becoming aware of such conditions and within five (5) days, provide in writing, the following information:

- a. That an upset occurred and that the permittee can identify the specific cause(s) of the upset;
- b. That the permitted wastewater treatment facility was, at the time, being properly operated;
- c. That the permittee has specified and taken action on all responsible steps to minimize or correct any adverse impact in the environment resulting from noncompliance with this permit.

In any enforcement proceedings the permittee, seeking to establish the occurrence of an upset, has the burden of proof.

13. Any requirement of this permit which is included under the unique terms of the Water Resources Commission, Act 245, P.A. of 1929, as amended, and rules promulgated thereunder, is not enforceable under the Federal Clean Water Act regulations.

PART II

B. RESPONSIBILITIES

1. Right of Entry

The permittee shall allow the Executive Secretary of the Michigan Water Resources Commission, the Regional Administrator and/or their authorized representatives, upon the presentation of credentials:

- a. To enter upon the permittee's premises where an effluent source is located or in which any records are required to be kept under the terms and conditions of this permit; and
- b. At reasonable times to have access to and copy any records required to be kept under the terms and conditions of this permit; to inspect any monitoring equipment or monitoring method required in this permit; and to sample any discharge of pollutants.

2. Transfer of Ownership or Control

In the event of any change in control or ownership of facilities from which the authorized discharge emanates, the permittee shall notify the succeeding owner or controller of the existence of this permit by letter, a copy of which shall be forwarded to the Jackson District Supervisor of the Surface Water Quality Division and the Regional Administrator.

3. Availability of Reports

Except for data determined to be confidential under Section 308 of the Act and Rule 2128 of the Water Resources Commission Rules, Part 21, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of the State Water Pollution Control Agency and the Regional Administrator. As required by the Act, effluent data shall not be considered confidential. Knowingly making any false statement on any such report may result in the imposition of criminal penalties as provided for in Section 309 of the Act and Sections 7 and 10 of the Michigan Act.

4. Permit Modification

After notice and opportunity for a hearing, this permit may be modified, suspended, or revoked in whole or in part during its term for cause including, but not limited to, the following:

- a. Violation of any terms or conditions of this permit;
- b. Obtaining this permit by misrepresentation or failure to disclose fully, all relevant facts; or
- c. A change in any condition that requires either a temporary or permanent reduction or elimination of the authorized discharge.

PART II

Section B.

5. Toxic Pollutants

Notwithstanding Part II.B.4. above, if a toxic effluent standard or prohibition (including any schedule of compliance specified in such effluent standard or prohibition) is established under Section 307(a) of the Act for a toxic pollutant which is present in the discharge and such standard or prohibition is more stringent than any limitation for such pollutant in this permit, this permit shall be revised or modified in accordance with the toxic effluent standard or prohibition and the permittee so notified.

6. Civil and Criminal Liability

Except as provided in permit conditions on "By-Passing" (Part II.A.9., pursuant to 40 CFR 122.41(m)) and "Upset" (Part II.A.12., pursuant to 40 CFR 122.41(n)), nothing in this permit shall be construed to relieve the permittee from civil or criminal penalties for noncompliance, whether or not such noncompliance is due to factors beyond his control, such as accidents, equipment breakdowns, or labor disputes.

7. Oil and Hazardous Substance Liability

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee may be subject under Section 311 of the Act except as are exempted by federal regulations.

8. State Laws

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable State law or regulation under authority preserved by Section 510 of the Act.

9. Property Rights

The issuance of this permit does not convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize violation of any Federal, State or local laws or regulations, nor does it obviate the necessity of obtaining such permits or approvals from other units of government as may be required by law.

10. Severability

The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstances, if held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

11. Notice to Public Utilities (Miss Dig)

The issuance of this permit does not exempt the permittee from giving notice to public utilities and complying with each of the requirements of Act 53 of the Public Acts of 1974, being sections 460.701 to 460.718 of the Michigan Compiled Laws, when constructing facilities to meet the terms of this permit.